MEDICAL LIBRARY

DEC 7 · 1934

This Issue Exceeds 87,000 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 103, No. 22 | 535 North Dearborn Street, CHICAGO, ILL. | DECEMBER 1, 1934

CONTENTS AND SUBJECT INDEX

Neurologic Changes in Pernicious Anemia. S. M. Goldhamer, M.D.; F. H. Bethell, M.D.; Raphael Isaacs, M.D., and Cyrus C. Sturgis, M.D., Ann Arbor, Mich.....1663

The Treatment of Chronic Hemolytic Jaundice with Liver Extract. E. C. Reifenstein, M.D., and E. G. Allen, M.D., Syracuse, N. Y.....1668

The Treatment of Hemophilia. H. W. Jones, M.D., and L. M. Tocantins, M.D., Philadelphia.1671
Papers of Drs. Goldhamer, Bethell, Isaacs and Sturgis, Drs. Reifenstein and Allen and Drs. Jones and Tocantins discussed by Drs. Sachs, Langston, Sydenstricker, Haden, Blair, Blankenhorn, Tocantins, Goldhamer and Allen.

Results of Prolonged Irradiation for Malignant Conditions of Pelvis. T. E. Jones, M.D., Cleveland..1678
Discussed by Dr. Ward.

The Significance of Mixed Infections in Pneumococcic Pneumonia. Maxwell Finland, M.D., Boston...1681
Discussed by Drs. Sutliff and Finland.

Ectopic Pregnancy. Chester M. Echols, M.D., Milwaukee.....1686
Discussed by Drs. Heiman, De Lee, Novak and Weir.

Oxygen in Treatment of Acute Coronary Occlusion. A. L. Barach, M.D., and R. L. Levy, M.D., New York 1690
Discussed by Drs. Boothby, Ernstene, Hick, Bishop, Friedrich, Barach and Levy.

High Frequency Currents in Performing Biopsies. Jacques P. Guequierre, M.D., and Fred D. Weidman, M.D., Philadelphia.1693
Discussed by Drs. MacKee, Wien and Weidman.

The Association of Sinus Disease and Middle Ear Infection. M. M. Cullom, M.D., Nashville, Tenn...1695
Discussed by Drs. Richards, Hoople, Shambaugh, Evans, Pratt and Cullom.

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Sarcoma of the Kidney. E. A. Watson, M.D., Grand Island, Neb., and B. C. Russum, M.D., Omaha..1700

Fibroblastoma. Stuart W. Harrington, M.D., and Winchell McK. Craig, M.D., Rochester, Minn..1702

Diabetic Gangrene of the Face and Ear Complicated by Fifth and Seventh Nerve Involvement. A. J. Brier, M.D., Topeka, Kan.....1704

SPECIAL ARTICLE

The Evaluation of Serodiagnostic Tests for Syphilis in the United States. H. S. Cumming, M.D., and H. H. Hazen, M.D., Washington, D. C.; Arthur H. Sanford, M.D., Rochester, Minn.; Francis E. Senear, M.D., Chicago; Walter M. Simpson, M.D., Dayton, Ohio, and R. A. Vonderlehr, M.D., Washington, D. C.....1705

COUNCIL ON PHARMACY AND CHEMISTRY 1708

COMMITTEE ON FOODS 1709

EDITORIALS

The Atlantic City Session.....1710
Hypertension 1710
Palilalia and Gertrude Stein....1711

CURRENT COMMENT

Pernicious Anemia.....1712

(Subject Index on next page)

ASSOCIATION NEWS 1713

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of Oct. 3, 1917, authorized on June 14, 1918.

Copyright, 1934, by the American Medical Association. NEXT ANNUAL SESSION, ATLANTIC CITY, N. J., JUNE 10-14, 1935

CURTIS' OBSTETRICS & GYNECOLOGY

This successful work was written to meet the needs of the family physician as well as those of the obstetrician, gynecologist and surgeon. It places particular emphasis on those problems which the family physician meets at the bedside and in his office.

Signs of pregnancy; the newest tests—how to make them and what they mean; determination of the position of the fetus; the significance of the fetal heartbeat and how to elicit it; pelvic measurements; step-by-step details of delivery; use of forceps; hemorrhage and its control; care of the mother and child—all those details of Obstetrics so important in the conduct and management of a case from conception to delivery and after-care.

This same thoroughness, this same completeness, this same emphasis is given to the divisions of the work devoted to Gynecology. You will find medical treatment as well as surgical technic. You will find precise instructions for examination, full chapters on sterility; leukorrhea; uterine displacements and their correction; late advances in the field of endocrinology and their application in diagnosis and treatment.

Moreover, the important things to do and how to do them are instructively illustrated with 2150 magnificent illustrations on 1674 figures, 78 of them in colors. This is a fine work in three handsome volumes—by 80 leading authorities, edited by Dr. Arthur Hale Curtis of Northwestern University.

Further details in SAUNDERS ADVERTISEMENT on Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab." abstract; "E." Editorial; "C." Correspondence; "MI," Medicolegal; "ME," Medical Economics.

A. M. A. Annual Congress on Medical Education and Licensure....1713
Atlantic City Session....E-1710
Abdomen, laparotomy, gas bacillus infection complicating....ab-1736
syndromes in pneumonia in children....1720
Achylia, gastric, in polyarthritis....ab-1744
Agar, nutrient, preparation....ab-1739
Allergy, physical, early references to...C-1725
Alopecia areata in girl, aged 11....1727
American Association for Study and Control of Rheumatic Diseases....1732
Board of Psychiatry and Neurology....1717
Anemia, Cooley's....ab-1740
pernicious, nature and therapy....E-1712
pernicious, neurologic changes....*1663
pernicious, yeast or vitamin B_2 in...ab-1735
Angina Pectoris, atropine in....ab-1743
strophanthin in....ab-1743
Arteries, coronary occlusion, oxygen for.*1690
mesenteric, occlusion....ab-1737
Arthritis, American Association for Study and Control of Rheumatic Diseases...1732
chronic....ab-1732
chronic atrophic, streptococcus vaccine for....ab-1733
chronic, nutritional factors....ab-1734
focal infection and....ab-1732
gastric achylia in polyarthritis....ab-1744
Ascariasis, surgical complications....ab-1741
Association News....1713
Asthma, Tucker's Asthma Specific....1728
Bacillus culture, preparation of nutrient agar....ab-1739
welchii infection complicating laparotomy....ab-1736
Biopsies, high frequency currents in performing....*1693
Birth Control, Gräfenburg ring....1727
Bismuth subnitrate in hypertension....E-1710
Bladder complications in pelvis irradiation.*1678
Blood chlorides in hyperemesis gravidarum....ab-1744
pressure, high, bismuth subnitrate in..E-1710
Board Examinations....1729
Bone, primary liposarcoma....ab-1736
Book Notices....1730
Books Received....43
Brain, changes in pernicious anemia....*1663
Bureau of Investigation....1724
Burns, tannic acid in....1726
Canadian Medical Association meets with A. M. A....E-1710
Cancer production, rôle of aluminum in....1719
Central Society for Clinical Society....1717
Chromaffin glands, enteric, research on.ab-1741
Committee on Foods....1709
Conference on Rheumatic Diseases (third).1732
Correspondence....1725
Council on Medical Education and Hospitals....1729
Council on Pharmacy and Chemistry....1708
Cranium, is there a labyrinthine concussion?....1721
Cult initiatives defeated, California....1736
Deaths....1722
Diabetes Mellitus, gangrene of face and ear....*1704
Diathermy, surgical, in performing biopsies....*1693
Dystrophy brevicollis, congenital....ab-1744
Ear, diabetic gangrene of....*1704
Eggs, duck, food poisoning....1720
Encephalitis, congenital, after maternal influenza....ab-1735
Endocrine roentgen stimulation....ab-1740
Enema, postoperative....ab-1738
Face, diabetic gangrene of....*1704
isolated chancre-like pyodermia....ab-1742
Families, promoting hereditarily healthy, Germany....1721
Fat meal, high, effect on respiratory quotient....ab-1737
Fibroblastoma, mediastinal and intraspinal perineurial....*1702
Food poisoning from duck eggs....1720
Foreign Letters....1718
Gas warfare....1719
Glycine, effect on creatinuria in peripheral neuritis....ab-1735
Gonorrhea, complement deviation in....ab-1741
treatment, in women....1727
Gross Lecture....1716
Growth stimuli, thyroid tissue under influence of....ab-1740
Harelip, double, operation for....ab-1736
Harvey Lecture, third....1715
Health commissioner, term extended....1714
officers' meeting, Ohio....1716
state officer appointed, North Carolina...1716
Heart, electrocardiography in practice....1728
worms....1728
Hemophilia, treatment....*1671
Hidradenoma of vulva....ab-1744
Highland Park Physicians Club clinic....1715
Hip Joint, fracture, new method of skeletal fixation for....ab-1738
Infection, focal, and arthritis....ab-1732
mixed, in pneumococcic pneumonia...*1681
streptolysins....ab-1739
Influenza, maternal, with encephalitis in child....ab-1735
Insurance, International Congress on Life Assurance Medicine....1718
Intestines, chromaffin glands....ab-1741
complications of pelvis irradiation....*1678
Jaundice, hemolytic chronic, liver extract for....*1668
Jones, Edward H., Weyauwega honors....1717
Kidney, effect of pituitary extract on water elimination through....ab-1744
renal rickets....ab-1744
small spindle cell sarcoma....*1700
Klippel-Feil's Disease, congenital dystrophilia brevicollis....ab-1744
Labyrinthine concussion?....1721
Lambliasis, neoarsphenamine for....ab-1743
Lichen planus in aged....1728
Liposarcoma, primary, of bone....ab-1736
Liver extract in chronic hemolytic jaundice....*1668
function test, bile acid tolerance....ab-1742
function test, water tolerance....ab-1742
functional disorders in skin diseases..ab-1742
Maimonides, 800th anniversary....1714
Malpractice: tonsillectomy; negligent postoperative care....MI-1731
Marriages....1722
Mediastinum, fibroblastoma....*1702
Medicolegal....1731
Meetings, Coming Meetings....1732
Meningitis, Vincent antistreptococcic serum....1720
Meningo-encephalitic in pneumonia in children....1720
Menopause, bleeding during....1719
Menstruation, toxin of....ab-1743
Mental Hygiene, 25 years of....1717
Metabolism, basal, effect of high fat meal on....ab-1737
Neoarsphenamine, sensitization....1725
Nerve, fifth and seventh, involved in diabetic gangrene....*1704
Neuritis, peripheral, glycine effect on creatinuria in....ab-1735
New and Nonofficial Remedies....1708
News....1713
Old Age, lichen planus in....1728
Otitis Media with sinus disease....*1695
Otorhinolaryngology, course in, Washington, D. C....1713
Pageant, medical....1714
Palilalia and Gertrude Stein....E-1711
Parran, Thomas, Jr., resigns from Radio Advisory Council....1715
Pelvis, abscess, prolonged irradiation....*1678
Pituitary extract effect on water elimination by kidneys....ab-1744
cachexia, Simmond's disease....ab-1743
Plague bacillus, cultivation....ab-1739
Pneumonia, pneumococcic, mixed infections in....*1681
cerebral and abdominal syndromes in, in children....1720
repeated, prophylaxis against....1727
Poliomyelitis, acute anterior, vaccination against....ab-1735
Pregnancy, extra-uterine....*1686
influenza in, with encephalitis in child.ab-1735
vomiting of, blood chlorides in....ab-1744
Pyodermia, isolated chancre-like facial...ab-1742
Queries and Minor Notes....1725
Rabies, incubation period in....1726
Radio Advisory Council, Dr. Parran resigns from....1715
treatment of disease....1718
Radio Program....1713
Radium, National Radium Trust and Radium Commission....1718
Rectum complications of pelvic irradiation.*1678
Reynolds, Carl V., appointed state health officer, North Carolina....1716
Rheumatic Diseases, third Conference on..1732
Rickets, renal....ab-1744
Roentgen stimulation of endocrine....ab-1740
Sarcoma, spindle cell, of kidney....*1700
Sawyer, W. A., to give third Harvey Lecture....1715
Science lecture series, Georgia....1714
Sims, James M., statue rededicated....1715
Sinus, Nasal, disease, with middle ear infection....*1695
Skin diseases, functional hepatic disturbances in....ab-1742
Society Proceedings....1732
Spinal Cord, changes in pernicious anemia.*1663
Spine, intraspinal perineurial fibroblastoma.*1702
State Board Examinations....1729
Stein, Gertrude, and palilalia....E-1711
Stomach, cancer, atypical forms....ab-1742
Streptococcus, new Vincent antiserum....1720
Streptolysins, serologic study....ab-1739
Surgery, complications of ascariasis....ab-1741
postoperative enema....ab-1738
Syphilis, serodiagnostic tests, evaluation..*1705
virus, variations....1719
Teeth, innervation of pulp....1728
Thrombosis, coronary, oxygen treatment.*1690
mesenteric....ab-1737
pathology, liver extract for....ab-1743
Thyroid tissue under growth stimuli influence....ab-1740
Tonics and Sedatives....36
Tuberculosis, sedimentation speed in....ab-1744
conferences, Missouri....1715
control, program for, New York....1715
sanatorium, new forms for records....1717
Tucker's Asthma Specific....1728
Twins, research on....1721
Typhoid vaccination, agglutinin response to....ab-1739
Urine, creatinuria, glycine effect on....ab-1735
therapeutic use....ab-1743
Uterus cancer, prolonged irradiation....*1678
hemorrhage during menopause....1719
Vincent antistreptococcic serum....1720
Vital Statistics, mortality and morbidity.C-1725
mortality, Germany....1721
Vulva, hidradenoma....ab-1744
War injured, number in Germany....1721
Warren, S., to give Gross lecture....1716
Water, elimination by kidneys, effect of pituitary extract....ab-1744
softener manufacture, hazards in....1726
Whooping Cough, vaccination against..ab-1740
Woodworth, Elizabeth A., honored....1715
Workmen's Compensation Acts: medical treatment; operation, refusal to undergo....MI-1731
Writing, automatic, and Gertrude Stein..E-1711

BOOK BUYING SIMPLIFIED

We supply new and standard medical works of all publishers

ONE ORDER—ONE REMITTANCE
GET OUR LATEST BULLETIN

CHICAGO MEDICAL BOOK CO. 435 S. Honore St. CHICAGO

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, NO. 22 CHICAGO, ILLINOIS DECEMBER 1, 1934

THE OCCURRENCE AND TREATMENT OF NEUROLOGIC CHANGES IN PERNICIOUS ANEMIA

S. M. GOLDHAMER, M.D.

F. H. BETHELL, M.D.

RAPHAEL ISAACS, M.D.

AND

CYRUS C. STURGIS, M.D.

ANN ARBOR, MICH.

In recent years with the advent of a potent medication for the treatment of the anemia of pernicious anemia, a great deal of consideration has been given to the effect of liver and desiccated stomach therapy on the associated lesions of the spinal cord and brain in this disease. Innumerable workers have reported, with considerable diversity of opinion,[1] the results of their investigation concerning the progression and prevention of nervous system involvement. Our purpose in this paper is to present a study of a comparatively large group of patients, extending over a period of seven years, concerning the occurrence of neurologic and mental manifestations in pernicious anemia and to determine the effect of various types of antianemic therapy on them.

The group consisted of 461 patients with pernicious anemia observed at the Simpson Memorial Institute between the years 1927 and 1934. Comprising this group were 261 men (56.6 per cent) and 200 women (43.4 per cent), ranging in age from 20 to 80 years. Of this total, 408 (88.5 per cent) patients are still alive and fifty-three patients (11.5 per cent) are dead. Table 1 lists the age and sex distribution of those patients who are still living. The general admission ratio between all men and women at the University of Michigan Hospital is, however, approximately the same as that of the pernicious anemia group, and this may account for the difference in the latter group.

Regardless of the age group, nervous system involvement has been noted in 364 of the 408 patients (89.2 per cent). Of this group, 43.2 per cent had the symptoms of cord changes at the onset of the disease, and in the remainder (46 per cent) the changes developed at some period during the course of the illness, but before the patient came under our observation. Posterior column manifestations, including numbness and tingling of the hands and feet, were present in 89.2 per cent of the patients. Evidence of involvement of the lateral column was noted in 41.6 per cent and combined degeneration in 40.7 per cent. In a series of fifty of these patients, especially studied by Dr. George Hammond of our clinic, cerebral symptoms occurred in 64 per cent.

In table 2 are listed the relationship between the age, the sex, the clinical manifestations of pathologic changes of the cord, and the red blood cell count when the patients were first observed by us. Apparently the occurrence of cord manifestations is independent of the state of the blood and may occur at any age. Furthermore, from table 3, it is obvious that the earliest evidence of the disease may be an alteration of the nervous system that precedes the development of the anemia. Also, it is apparent that a severe anemia may be present without evidence of spinal cord changes. It is suggestive, moreover, from this table, that there is a slightly greater tendency for cord changes to develop at the onset of the disease in women than in men, as this occurred in 48.8 per cent of the former and 37.6 per cent of the latter.

A series of fifty cases was selected at random and studied intensively in order to determine the occurrence of various individual neurologic symptoms and signs (table 4), which might indicate involvement of the nervous system. These observations were made by various members of the staff during routine examinations. The importance of the frequency of such symptoms and signs as numbness, tingling, ataxia, impaired vibratory sensation, hyperactive reflexes, irritability and bladder disturbances is most evident.

A second series of fifty cases was selected by Dr. George Hammond with the specific idea of determining the frequency of all the possible neurologic manifestations listed by Tilney and Riley (table 5). The striking features in this group are the wide variety of manifestations of disease of the spinal cord and the frequency of mental changes,[2] which have not received

From the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan.

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. These include:
Davison, Charles: Spinal Cord Changes in Subacute Combined Degeneration Following Livery Therapy, Proc. Soc. Exper. Biol. & Med. **28:** 639 (March) 1931.
Farquharson, R. F., and Graham, Duncan: Liver Therapy in the Treatment of Subacute Combined Degeneration of the Cord, Canad. M. J. **23:** 237 (Aug.) 1930.
Fried, B. M.: Subacute Combined Degeneration of the Spinal Cord in Pernicious Anemia: Treatment with Liver Diet, J. A. M. A. **92:** 1260 (April 13) 1929.
Garvey, P.; Levin, P., and Guller, E.: Effects of Liver Therapy on the Neurologic Aspects of Pernicious Anemia, Ann. Int. Med. **6:** 1441 (May) 1923.
Riely, C.: Neurologic and Psychopathic Manifestations of Pernicious Anemia, J. Michigan M. Soc. **31:** 272 (April) 1932.
Minot, G. R.: The Treatment of Anemia, Tr. Am. Neurol. A., 1931.
Sargant, Will: Treatment of Subacute Combined Degeneration of Cord by Massive Iron Dosage, Lancet **1:** 230 (Jan. 30) 1932.
Smithburn, R. C., and Zerfas, L. G.: The Neural Symptoms and Signs in Pernicious Anemia: Effects of Liver Extract, Arch. Neurol. & Psychiat. **25:** 1100 (May) 1931.
Ahrens, R. S.: Neurologic Aspects of Primary Anemia, Arch. Neurol. Psychiat. **28:** 92 (July) 1932.
Baker, B. M. Jr.; Bordley, James III, and Longcope, W. T.: The Effect of Liver Therapy on the Neurologic Manifestations of Pernicious Anemia, Am. J. M. Sc. **184:** 1 (July) 1932.

2. Camp, C. D.: Pernicious Anemia Causing Spinal Cord Changes and a Mental State Resembling Paresis, M. Rec., Jan. 27, 1912. Woltman, H. W.: Brain Changes Associated with Pernicious Anemia, Arch. Int. Med. **21:** 791 (June) 1918. Lurie, L. A.: Pernicious Anemia with Mental Symptoms, Arch. Neurol. & Psychiat. **2:** 67 (July) 1919. McAlpine, Douglas: A Review of the Nervous and Mental Aspects of Pernicious Anemia, Lancet **2:** 643 (Sept. 28) 1929. Piney, A.: Mental Changes Associated with Pernicious Anemia, J. Neurol. & Psychopath. **13:** 127 (Oct.) 1932.

as much emphasis in the literature. Evidence of cerebral involvement was noted in 64 per cent of the cases. This varied from very mild irritability to severe mania. Cerebral manifestations may be present alone or in association with cord disturbances, they may be present with or without any evidence of anemia, and they may present themselves as the earliest and only manifestation of pernicious anemia.

To determine progression of cord changes with treatment in pernicious anemia, three factors may be considered. First, the majority of patients have at least slight evidence of cerebral involvement; therefore evaluation of subjective information is often difficult, and some doubt must be cast on a statistical study based solely on data of this character. Second, only exaggerated variations from the normal can be listed in an arbitrary manner, as there is no exact method by which subjective information may be recorded. For example, as shown by Piercy,[3] Gray [4] and others, the threshold value of vibratory sensation varies in individuals. Various test points have different values; the vibratory sensation is less pronounced as one grows older, although never entirely absent, and the results depend somewhat on the touch and pressure of the observer and the degree of cooperation, fatigue of the patient and the amount of edema and paresthesia present. Lastly, it is well known that the examiner may note positive evidence on one occasion and negative on another in spite of the fact that no treatment has been instituted. This finding has been explained by many investigators as being due to the fact that symptoms and signs of central nervous system involvement may exist without the presence of demonstrable pathologic changes of the cord. These facts must be given serious consideration when conclusions are drawn regarding the benefits derived from the various types of therapy. Furthermore, it must be emphasized, as Ahrens [1] and other observers have noted, that there may be spontaneous variations in the intensity of the neurologic manifestations, and thus all conclusions regarding the effect of treatment must be made with caution.

TABLE 1.—*Age and Sex Distribution of the Pernicious Anemia Patients Studied in this Group*

Age Groups	Male	Female	Total
20–29	7	4	11
30–39	12	16	28
40–49	44	43	87
50–59	78	55	133
60–69	70	48	118
70–79	20	11	31
Total	231	177	408

For the purpose of classification, a level of 4 million red blood cells per cubic millimeter has been selected arbitrarily as the dividing line between those patients who had received a reasonable amount of treatment and those in whom treatment had been obviously inadequate. Included in the latter group are: (1) those who took too little treatment or none at all, and (2) those who did not respond to the usual dosage of antianemia therapy, which would have been sufficient for most patients.

The average duration of the disease in the entire group of patients before admission was about two years. Although the general clinical impression has been that there is a definite correlation between the duration of illness before treatment and the prognosis, our observations do not support this view conclusively. Of 126 adequately treated patients in the male group, when first observed by us, eleven had no demonstrable cord lesions, sixty-one had posterior column involvement, one had lateral tract degeneration and fifty-three had combined degeneration (table 6). Of the eleven patients with no neurologic manifestations, spinal cord involvement developed in six and did not develop in five. Of sixty-one patients with posterior column degeneration, improvement in symptoms was noted in twenty-five instances following treatment and improvement in signs in four instances. There was no symptomatic improvement in twenty-nine of the patients and none in the signs in thirty-three of the patients. In three patients the symptoms became more

TABLE 2.—*Relationship Between Age, Sex, Clinical Manifestations of the Spinal Cord Lesion, and Red Blood Cell Count Per Cubic Millimeter, on Admission*

		Red Blood Cells, Millions per Cu. Mm.																			
		0.0-0.9			1.0-1.9			2.0-2.9			3.0-3.9			4.0-4.9			50.-5.9			6.0-6.9		
	Age, Years	P.	L.	PL.	P.	L.	PL.	P.	L.	PL.	P.	L.	PL.	P.	L.	PL.	P.	L.	PL.	P.	L.	PL.
Males	20–29	1	..	..	1	..	..	2	1	1	1	1	1	..	..	..	..	..	..	..	..	..
	30–39	..	..	..	3	..	..	1	..	..	4	3	3	1	..	..	..	..	..	..	..	..
	40–49	2	..	..	16	7	7	12	6	6	5	3	3	3	1	1	1	1	1	1	..	..
	50–59	9	3	3	18	6	5	20	15	15	15	3	3	7	4	4	3	2	2	..	..	..
	60–69	7	4	4	20	7	7	18	8	8	16	10	10	4	2	2	1	..	..	..	..	..
	70–79	1	..	..	5	3	3	6	2	2	3	1	1	..	..	..	..	..	..	..	..	..
Total		20	7	7	63	28	22	59	32	32	44	21	21	15	7	7	5	3	3	1	..	..
Females	20–29	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	..	..	..
	30–39	2	1	1	1	1	1	5	2	2	3	3	3	1	..	..	..	..	..	..	..	..
	40–49	2	1	1	14	7	7	9	4	3	11	7	7	4	2	2	..	..	..	..	..	..
	50–59	3	1	1	22	8	8	11	6	6	12	8	8	1	1	1	2	2	1	..	..	..
	60–69	3	2	2	11	3	3	15	10	10	6	4	3	6	2	2	..	..	..	..	..	..
	70–79	..	..	..	3	1	1	3	..	..	2	..	..	2	..	..	1	..	..	..	..	..
Total		10	5	5	51	20	20	43	22	21	35	23	22	15	5	5	3	2	1	..	..	..

	Number			Per Cent		
	Posterior Column Manifestations	Lateral Column Manifestations	Posterolateral Column Manifestations	Posterior Column Manifestations	Lateral Column Manifestations	Posterolateral Column Manifestations
Males	207	93	92	89	39.8	39.5
Females	157	77	74	89	43.5	41.8

3. Piercy, H. D.: Quantitative Measurement of the Vibration Sensation, Ohio State M. J. **19**: 572 (Aug.) 1923.
4. Gray, R. C.: A Quantitative Study of Vibratory Sense in Normal and Pernicious Anemia Cases, Minnesota Med. **15**: 674 (Oct.) 1932.

severe and in six patients the physical signs progressed. It was not possible to make observations on four of the patients after treatment had been instituted. Only one case was noted with lateral column involvement alone, but unfortunately it was not possible to obtain further observations on this patient. Of fifty-three patients with combined degeneration, the symptoms were improved in twenty-three following treatment, they were unchanged in twenty-three and accentuated in five. In no instance were the signs improved; in forty-two they remained the same, and they progressed in five. In two patients no further observations were made following treatment.

Of a total of sixty-nine cases inadequately treated among the males, (table 6), thirteen presented no evidence of spinal cord changes when first observed. Eleven of these developed neurologic manifestations during the course of this inadequate therapy and two spinal cord involvement, thirty-nine had posterior column degeneration and thirty-five had combined degeneration. The condition of four of the seven patients without spinal cord involvement remained unchanged following treatment; in two neurologic manifestations developed and in one patient no further data were obtained. Of thirty-nine patients with posterior column degeneration, the symptoms improved in twenty-one, remained unchanged in seventeen and became worse in one. In the same group the signs did not. Of thirty-eight cases of posterior column degeneration, the symptoms improved in five, remained the same in twenty-one and were progressive in twelve. In the same group of cases, the signs regressed in one instance, remained unchanged in twenty-one and progressed in fifteen. In the eighteen instances with combined degeneration, the symptoms improved in two, remained unchanged in eleven and became worse in five. The signs did not improve in any of the cases of this group; they were unchanged in eleven and progressed in five.

In the group of eighty-one female patients who were adequately treated (table 6), seven had no evidence of improved in none, were constant in eighteen and progressed in two. In thirty-five patients with combined degeneration, the symptoms improved in fifteen, were constant in nineteen and were worse in one. In the

TABLE 3.—*Relationship Between Age, Sex, and Clinical Manifestations of Spinal Cord Pathology at Onset of Disease*

		Red Blood Cells per Cu. Mm. in Millions on Admission													
		0.0-0.9		1.0-1.9		2.0-2.9		3.0-3.9		4.0-4.9		5.0-5.9		6.0-6.9	
	Age, Years	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Males	20-29	..	1	1	2	..	2	..	1	..	..	..	..	..	..
	30-39	..	..	2	2	..	3	2	2	..	1	..	..	..	..
	40-49	1	2	6	13	5	7	4	2	1	2	1	..	..	..
	50-59	2	7	7	13	5	16	10	7	3	4	2	1	..	1
	60-69	2	5	5	18	12	8	8	7	2	2	1	..	..	..
	70-79	..	1	1	9	2	4	2	1	..	..	..	..	..	..
	Total	5	16	22	57	24	40	26	20	6	9	4	1	..	1
	Total yes, 87, 37.6%; total no, 144, 62.4%														
Females	20-29	..	..	..	2	..	..	1	..	1	..	..	..	..	..
	30-39	2	1	1	1	2	3	2	2	1	1	..	..	..	..
	40-49	1	1	6	8	4	7	8	3	3	2	..	..	..	..
	50-59	2	1	8	14	4	10	10	2	1	..	1	2	..	..
	60-69	2	1	4	9	10	5	4	7	3	2	..	..	..	..
	70-79	..	..	1	2	1	2	2	..	1	1	..	1	..	..
	Total	7	4	20	36	21	27	27	14	10	6	1	3	..	..
	Total yes, 86, 48.8%; total no, 90, 51.2%														

TABLE 4.—*Incidence of Neurologic Manifestations in Fifty Cases of Pernicious Anemia (Routine Examination)*

	Present, per Cent	Absent, per Cent	Question-able, per Cent	Unrecorded, per Cent
A. Posterior Column Manifestations				
1. Numbness	88	10	..	2
2. Tingling	82	12	..	6
3. Impaired vibratory sense	28	40	26	6
4. Loss of position	12	58	16	14
5. Ataxia in locomotion	54	28	..	18
6. Biceps jerks, decreased or lost	0	82	2	16
7. Triceps jerks, decreased or lost	0	78	2	20
8. Knee jerks, decreased or lost	4	60	26	10
9. Ankle jerks, decreased or lost	6	60	18	16
10. Bladder disturbances	22	72	..	6
B. Lateral Column Manifestations				
1. Biceps jerks, increased	18	64	..	18
2. Triceps jerks, increased	18	62	..	20
3. Knee jerks, increased	32	58	..	10
4. Ankle jerks, increased	30	54	..	16

TABLE 5.—*Incidence of Neurologic and Cerebral Manifestations in Fifty Cases of Pernicious Anemia (Special Examination)*

	Present, per Cent	Absent, per Cent	Question-able, per Cent	Unrecorded, per Cent
A. Posterior Column Manifestations				
Numbness	90	10	..	..
Tingling	84	16	..	..
Coldness	76	24	..	..
Band sensations	26	74	..	..
Sharp shooting pain	8	92	..	..
Loss of position sense	42	44	14	..
Decreased or lost vibratory sense	48	24	28	..
Astereognosis	26	60	8	6
Loss of finer coordination of fingers	64	36	..	..
Ataxia in locomotion	74	26	..	..
Rombergism	62	26	6	6
Cutaneous hyperesthesia	8	92	..	..
Anesthesia to touch	8	52	34	6
Anesthesia to temperature	6	46	42	6
Anesthesia to pain	8	56	30	6
Bladder disturbances	46	54	..	..
Muscular atrophy	24	76	..	..
Biceps reflex, decreased or lost	2	88	10	..
Triceps reflex, decreased or lost	2	88	10	..
Knee jerks, decreased or absent	18	60	22	..
Ankle jerks, decreased or absent	24	56	20	..
B. Lateral Column Manifestations				
Stiffness	42	58	..	..
Spastic paralysis of legs	6	94	..	..
Knee jerks, increased	38	62	..	..
Ankle jerks, increased	28	72	..	..
Ankle clonus	6	90	4	..
Babinski reflex	56	44	..	..
Biceps jerk, increased	14	86	..	..
Triceps jerk, increased	14	86	..	..
C. Cerebral Manifestations				
Mild depression	58	42	..	..
Violent maniacal outbursts	2	98	..	..
Indifference or apathy	6	94	..	..
Irritability	64	36	..	..
Delusions	18	82	..	..
Hallucinations	16	84	..	..
Memory disturbances	60	40	..	..
Coma	18	82	..	..

same group the signs improved in none, remained stationary in thirty and were progressive in one.

In a group of fifty-seven female patients inadequately treated, cord changes developed in one during the period of observation and did not develop in three; no further data were obtained. Thirty of these patients had posterior column degeneration. Of these, the symptoms improved in three, remained unchanged in fourteen, and became worse in eleven. In two cases, no further data were available. In the same group patients. One other fact worthy of mention is that the lower extremities are affected more often than the upper ones, and improvement is less common in them. This fact may possibly be related to the relatively greater length of the tracts supplying the legs as compared to those leading to the arms.

Table 8 shows the prognostic relationship between cord lesions and the various types of antianemic therapy given in adequate and inadequate amounts. It appears that fresh liver and intravenous liver extract

TABLE 6.—*The Effect of Adequate and Inadequate Therapy on the Spinal Cord Lesions in the Male and Female Series*

Type of Central Nervous System Pathology	No. of Cases	Result of Treatment—Male Series: Improvement, Symptoms	Improvement, Signs	No Improvement, Symptoms	No Improvement, Signs	Worse, Symptoms	Worse, Signs	Developed Cord Pathology	Therapy
Posterior column degeneration	61	25	4	29	33	3	6	..	Adequate
Lateral column degeneration	1	..	..	..	..	..	..	..	
Combined system degeneration	53	23	..	23	42	5	5	..	
None	11	..	..	..	..	..	..	6	
Posterior degeneration	38	5	1	21	21	12	15	..	Inadequate
Combined degeneration	18	2	..	11	11	5	5	..	
None	13	..	..	..	..	11	11	11	
Result of Treatment—Female Series									
Posterior column degeneration	39	21	..	17	18	1	2	..	Adequate
Combined column degeneration	35	15	..	19	30	1	1	..	
None	7	..	..	..	..	..	..	2	
Posterior column degeneration	30	3	..	14	17	11	12	..	Inadequate
Lateral column degeneration	2	..	..	1	1	..	..	..	
Combined column degeneration	19	2	..	12	15	3	3	..	
None	6	..	..	..	..	..	..	1	

there was no improvement in the signs; in seventeen cases they remained unaltered, and in twelve the signs progressed. Of nineteen patients with combined column degeneration the symptoms improved in two, remained unchanged in twelve and became worse in three. In none of these cases did the signs improve; in fifteen they remained stationary and in three they progressed. These observations suggest that there is a better prognosis when only the posterior tracts are involved than when combined tract degeneration is present and that improvement can be expected more often in symptoms than signs resulting from the spinal cord lesions.

In table 7 are listed the total number of patients (males and females) in the various age groups with cord signs and symptoms and their status following adequate and inadequate therapy. With adequate therapy the symptoms improved in 49 per cent, remained the same in 39 per cent and became worse in 12 per cent. The signs improved in 2 per cent, remained the same in 83 per cent and became worse in 15 per cent. With inadequate therapy, improvement of symptoms occurred in only 16 per cent, remained the same in 49 per cent and became worse in 35 per cent. The signs improved in 2 per cent, remained stationary in 59 per cent and became worse in 39 per cent. A comparison of the two groups in table 7 demonstrates most satisfactorily the advisability of giving adequate therapy for the blood, because of its secondary effect on the central nervous system. It cannot also be stated, however, that the antianemic treatment has a specific curative effect on the spinal cord degeneration but rather aids in the general feeling of the well-being of the patient. In this indirect way, at least, antianemic treatment contributes to the improvement in the manifestations in the central nervous system. Further, our observations would suggest that with adequate therapy there is a more favorable outlook for improvement in the neurologic involvement in younger

are somewhat superior to desiccated stomach and liver extract orally, in the treatment of the neurologic manifestations, but the number of cases is entirely too few to form a basis for definite conclusions. These figures again serve to illustrate the value of giving sufficient treatment for the anemia and its secondary effect on the spinal cord lesions.

Of the total of 461 patients, 11.5 per cent have died, of whom thirty were men and twenty-three women.

TABLE 7.—*The Effect of Adequate and Inadequate Therapy on the Spinal Cord Lesions in the Male and Female Series in the Various Age Groups*

Age, Years	Occurrence of Neurologic Manifestations, No. of Cases: Symptoms	Signs	Results of Treatment with Adequate Therapy: Improvement, per Cent: Symptoms	Signs	No Improvement, per Cent: Symptoms	Signs	Worse, per Cent: Symptoms	Signs
20-29	3	4	66	..	..	75	34	25
30-39	7	6	57	..	28	80	15	20
40-49	36	25	58	..	36	87	6	13
50-59	76	61	47	1	49	90	4	9
60-69	49	43	35	5	59	84	6	11
70-79	17	15	30	7	60	80	10	13
Total	188	134	Av. 49	2.0	39	83	12	15
Results of Treatment with Inadequate Therapy								
20-29	3	3	..	..	33	33	67	67
30-39	11	10	28	10	44	60	28	30
40-49	20	20	10	..	45	50	45	50
50-59	28	28	14	..	61	75	25	25
60-69	38	44	9	..	77	85	14	15
70-79	4	4	33	..	33	50	33	50
Total	94	109	Av. 16	2.0	49	59	35	39

The age limit of the group was 30 to 80 years. At the time of admission, the red blood cell counts ranged from less than one million to five million per cubic millimeter. Twenty-four of these patients, or approximately 45 per cent of the group who have died, had cord symptoms at the onset of the disease, and in an additional twenty-two, or 41 per cent, they developed before entrance to the hospital. Of this entire group,

56 per cent followed treatment as prescribed. Eleven patients died in the hospital and necropsies were performed on ten of them. All but one showed widespread combined degeneration of the spinal cord, and this patient had, in addition to pernicious anemia, carcinoma of the gallbladder, with no evidence of spinal cord involvement either clinically or at necropsy. As far as could be determined by correspondence, the cause of death could not be ascertained in fourteen cases. Of the remaining twenty-eight patients, seventeen were known to have been confined to bed before death because of progressive cord changes. The others died as the result of pneumonia, cardiac failure, nephritis and accidents (table 9).

TABLE 8.—*The Effects of Various Types of Antianemic Therapy on the Spinal Cord Manifestations When Given in Adequate and in Inadequate Amounts*

Type of Therapy	Number of Cases: Improvement, Symptoms	Improvement, Signs	No Improvement, Symptoms	No Improvement, Signs	Worse, Symptoms	Worse, Signs	Percentage: Improvement, Symptoms	Improvement, Signs	No Improvement, Symptoms	No Improvement, Signs	Worse, Symptoms	Worse, Signs
Results of Treatment with Adequate Therapy												
Liver	4	1	2	3	..	..	66	25	34	75	..	..
Liver extract by mouth	3	..	5	8	..	..	38	..	62	100	..	..
Desiccated stomach	15	2	24	27	4	4	35	6	55	82	10	12
Intravenous liver extract	22	..	10	26	1	4	66	..	30	87	4	13
Mixed	41	1	37	61	7	8	48	2	44	87	8	11
Results of Treatment with Inadequate Therapy												
Liver	1	..	3	4	3	3	14	..	43	57	43	43
Liver extract by mouth	..	..	2	2	2	2	..	..	50	50	50	50
Desiccated stomach	2	..	8	9	6	6	12	..	50	60	38	40
Intravenous liver extract	2	..	8	9	3	4	15	..	62	70	23	30
Mixed	8	..	37	40	18	21	13	1	59	65	28	34

The importance of complications in pernicious anemia cannot be overemphasized because of their unfavorable influence on the prognosis. The most common complications are trophic ulcers, lung infections and genito-urinary infections. Of the ten cases in which necropsies were performed, 73 per cent showed genito-urinary involvement clinically and 82 per cent at necropsy. Over 70 per cent of patients coming to postmortem examination had multiple gangrenous areas over the buttocks and heels. The presence of these complications is nearly always indicative of a terminal stage of the disease.

We have evaded the question of peripheral neuritis [5] occurring in pernicious anemia, as neuropathologists are not in agreement as to its existence. If it does occur, its presence in relapse and its disappearance with treatment may well account for the subjective improvement that is so frequently noted.

SUMMARY AND CONCLUSIONS

1. A series of 461 cases of pernicious anemia have been studied to determine the occurrence of neurologic manifestations and to observe the effect of various types of antianemia therapy on them.

2. Clinical evidence of spinal cord changes has been noted in 89.2 per cent of the cases and cerebral symptoms in 64 per cent.

3. Regardless of the type of adequate antianemic therapy, improvement in symptoms of the central nervous system was observed in less than 50 per cent of the cases, and improvement in signs in about 2 per cent of the cases.

4. Antianemic therapy, when given in sufficient amounts, does not have a specific curative effect on spinal cord degeneration but contributes only indirectly to the improvement of the manifestations of the central nervous system.

5. Whereas younger individuals appear to have a better prognosis, sex and duration of the disease do not appear to be significant factors. Great individual variation is noted in the progress of the disease in different individuals, and clinically there are slow and rapid types.

6. Such complications as genito-urinary infection, trophic ulcers and pneumonia, when present in association with marked central nervous system degeneration, are usually indicative of a poor prognosis.

TABLE 9.—*Causes of Death in Fifty-Three Cases of Pernicious Anemia*

	At Hospital: Autopsy	At Hospital: No Autopsy	At Home No Autopsy
Disseminated spinal cord degeneration	9	..	17
Pneumonia	..	1	2
Malignant condition	1	..	..
Unknown	..	..	14
Cardiac	..	..	5
Nephritis	..	..	2
Accident	..	..	2
Total	10	1	42

5. In addition to Ahrens,[1] Baker, Bordley and Longcope,[1] these include:
Greenfield, J. G., and O'Flynn, Elizabeth: Subacute Combined Degeneration and Pernicious Anemia, Lancet **2**: 62 (July 8) 1933.
Skoog, A. L.: Neurologic Manifestations in Pernicious Anemia, J. A. M. A. **87**: 1957 (Dec. 11) 1926.
Starr, Paul: The Prevention of Spinal Cord Degeneration in Pernicious Anemia, J. A. M. A. **96**: 1219 (April 11) 1931.
Suzman, M. M.: Effects of Liver Therapy in 100 Cases of Subacute Combined Degeneration of the Cord, reprinted from Tr. Am. Neurol. A. **57**: 339, 1931.
Ungley, C. C., and Suzman, M. M.: Subacute Combined Degeneration of the Cord: Symptomatology and Effects of Liver Therapy, Brain **52**: 271 (Sept.) 1929.
Ungley, C. C.: Effect of Brain Diet in Pernicious Anemia, Lancet **2**: 63 (July 11) 1931.
Ungley, C. C.: Effect of Brain Diet in Subacute Combined Degeneration of the Cord, Lancet **1**: 227 (Jan. 30) 1932.

Urologic Triumphs.—I might go on indefinitely through a long list of urological triumphs: the cystoscopic destruction of bladder tumors, the cystoscopic removal of ureteral calculi, the early recognition and cure of kidney cancer, conservative kidney surgery. The recognition of the nature of many vague abdominal syndromes which have been variously treated and mistreated until such time as a careful urological survey has demonstrated the underlying factors and removed them. However, the only point which I wish to make with this very sketchy review is that medicine and surgery have kept step with the rapid onward progress made in other lines and that urology, in spite of its youth, has contributed its full quota.—Rathbun, N. P.: Urology: Retrospect and Prospect, *J. Urol.* **32**:417 (Nov.) 1934.

THE TREATMENT OF CHRONIC HEMOLYTIC JAUNDICE WITH LIVER EXTRACT

EDWARD C. REIFENSTEIN, M.D.
AND
ELLERY G. ALLEN, M.D.
SYRACUSE, N. Y.

While chronic hemolytic jaundice is an interesting clinical entity, medical textbooks contain little detailed information concerning the disease and consequently many physicians are not thoroughly familiar with the condition. Some authors mention that chronic hemolytic jaundice is a rare disease, while others state that it is relatively common; in fact, Lee [1] makes the statement that the increasing literature indicates that it is actually more common than pernicious anemia, and it is possible that this startling declaration is true when one considers that mild atypical types of chronic hemolytic jaundice exist.

Two types of the disease are generally described, the congenital and the acquired. The former is more generally diagnosed, whereas the acquired type more frequently escapes recognition. Failure to diagnose the acquired type of the disease may be attributed to the unfamiliarity of physicians with the condition. Some authorities claim that there is a definite acquired type of chronic hemolytic jaundice, while others, especially Gänsslen,[2] dispute the point and maintain that the manifestations which appear in later life are but expressions in a case with an inherited constitutional hemolytic defect. Whether or not the latter is an adequate explanation, the term "acquired hemolytic jaundice" is justifiable if it but suggests to the observer the necessity for detailed studies of the blood and careful search for etiologic factors in jaundiced patients. In chronic hemolytic jaundice, such studies may reveal an increased icteric index, urobilinuria, a variable degree of anemia (possibly of a microcytic type), reticulocytosis, increased fragility of the erythrocytes to hypotonic sodium chloride solution, indirect van den Bergh reaction, notable absence of bile in the urine, and clay colored stools. In our experience we have observed such instances even in the absence of splenomegaly. Enlargement of the spleen, although difficult at times to detect, is not invariably demonstrable and unfortunately certain observers have refused to consider chronic hemolytic jaundice unless this abnormal finding is present. In our opinion the milder types of the disease may fail to show splenomegaly, and we feel that the failure to demonstrate it should not adversely influence the opinion when laboratory evidence indicative of dissociated jaundice is obtained. We have seen such instances in which there was an elevated icteric index, urobilinuria, microcytic anemia and increased fragility of the red cells without evidence of splenomegaly and in which no cause for the condition could be ascertained. It is probable that many such mild cases exist in which satisfactory explanation as to cause is lacking and many observers, particularly Krumbhaar,[3] have pointed out that the exciting cause in the acquired types cannot always be determined.

With regard to the treatment of the condition, splenectomy has long been considered to be the most successful accepted therapeutic procedure and in the majority of instances the results have been most gratifying. It is generally agreed that, although marked clinical improvement usually follows splenectomy, the resistance of the erythrocytes to hypotonic sodium chloride solution remains disturbed. Another point of interest is that following splenectomy occasional cases have been reported in which the hemolytic crises have recurred. The occasional therapeutic failures after splenectomy have been cited as arguments against the concept that the spleen is the primary cause of the disease. Because of these failures and because patients rarely die from the disease and, as one author states, "they are more jaundiced than sick," many clinicians have adopted a conservative attitude and have felt that splenectomy should not be done if the patient is not incapacitated by the disease. The mortality with splenectomy is reported to be about 3 per cent.

In certain instances this may influence the opinion against surgery, or conditions may be present which might make surgery inadvisable so that other methods of treatment may be necessary. In November 1929 one of us (E. C. R.) advised the use of liver extract for a patient having an acute crisis of chronic hemolytic jaundice because of the similarity of chronic hemolytic jaundice to pernicious anemia in relapse. The patient improved markedly in strength and appearance and at that time a surgeon advised against splenectomy. The patient, therefore, continued to take liver extract without medical supervision. In 1928, Ordway and Gorham,[4] giving the same reasons for using it, first successfully used liver extract in the treatment of chronic hemolytic jaundice and stated that the idea was original with them. However, they declared that Minot[5] in 1928 used liver extract in a case resembling acquired hemolytic jaundice and that following treatment the reticulocytes decreased rather rapidly and the red blood cell count returned to normal. In 1929 Lepehne [6] suggested the administration of liver (from 200 to 250 Gm.)

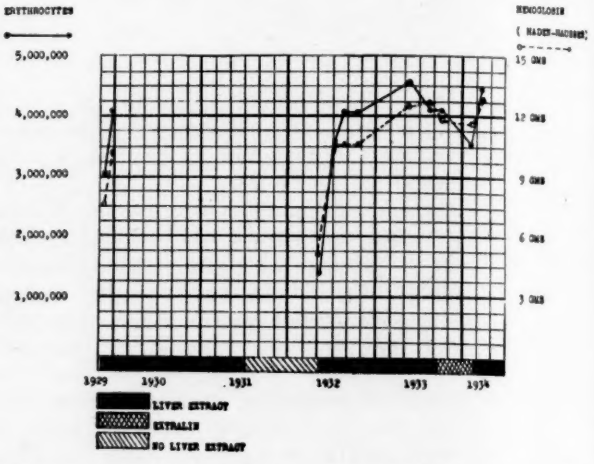


Chart 1 (case 1).—Erythrocyte and hemoglobin determinations from 1929 to 1934 during intervals of liver extract therapy, Extralin therapy and when no liver extract was given.

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Lee, R. I., in Blumer, George: Bedside Diagnosis, Philadelphia, W. B. Saunders Company, **11**: 713, 1928.

2. Gänsslen, M.: Deutsches Arch. f. klin. Med. **140**: 210, 1922. Gänsslen, M.; Zipperlen, E., and Schüz, E.: **146**: 1 (Jan.) 1925. Gänsslen, M.: Klin. Wchnschr. **6**: 929 (May 14) 1927.

3. Krumbhaar, E. B., in Cecil, R. L.: Textbook of Medicine, ed. 3, Philadelphia, W. B. Saunders Company, 1933, p. 1986.

4. Ordway, T., and Gorham, L. D.: Oxford Monographs on Diagnosis and Treatment (Disease of the Blood) **9**: 164, 1930.

5. Minot, G. R.; Murphy, W. P., and Stetson, R. P.: The Response of the Reticulocytes to Liver Therapy, Particularly Pernicious Anemia, Am. J. M. Sc. **175**: 581 (May) 1928.

6. Lepehne, G.: München. med. Wchnschr. **76**: 716 (April 26) 1929.

daily or liver extract in the less severe cases without marked crisis or anemia. In 1931 Neuburger [7] reported two cases in which liver extract was used and in which there followed no improvement in the anemia; hemolysis was not diverted, and the jaundice did not decrease. In the same year Jedlička and Várodi [8] used liver extract in three similar cases without good effect—either subjectively or objectively—and in one case, during treatment, increasing jaundice and more obvious splenomegaly developed.

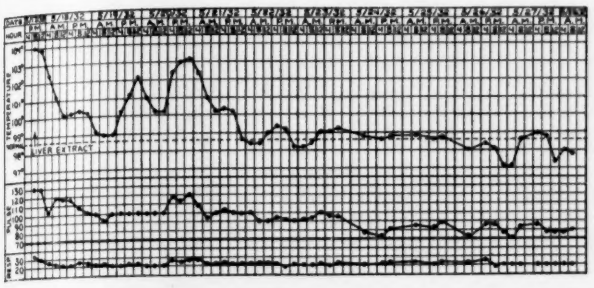


Chart 2 (case 1).—Temperature, pulse and respiration rate when no treatment other than liver extract was given.

The conflicting evidence in the literature justifies further studies as to the value of liver therapy in chronic hemolytic jaundice. Therefore we present the summary of our experience with this form of therapy in three such cases.

REPORT OF CASES

CASE 1.—A. M., a boy, aged 14, seen by E. C. R. in consultation with Dr. Adelbert Marsh, Nov. 2, 1929, complained chiefly of weakness, vertigo, fulness in the left upper quadrant of the abdomen, jaundice, and fever of three days' duration. The patient's mother was well. The father had had recurrent attacks of jaundice since childhood and at the present time has gallstones and his erythrocytes show an increased fragility to hypotonic sodium chloride solution. His sister had had recurrent attacks of jaundice since childhood. A recent test for the reaction of her erythrocytes to hypotonic sodium chloride solution revealed normal results.

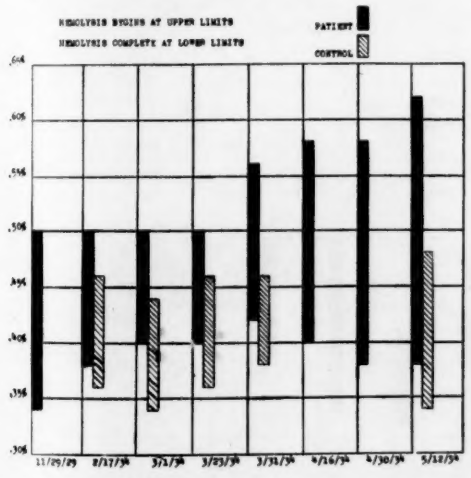


Chart 3 (case 1).—Fragility of erythrocytes to hypotonic sodium chloride solution.

In childhood the patient had mumps, measles and at 7 years of age pneumonia with otitis media. The tonsils were removed at 9 years of age. Since 6 years of age he had had recurrent attacks of fever and jaundice with vomiting without abdominal pain. These attacks would occur every two to three months and be of about one week's duration.

7. Neuburger, J.: Deutsche med. Wchnschr. **57**: 969 (June 5) 1931.
8. Jedlička, V., and Várodi, S.: Ztschr. f. klin. Med. **118**: 286, 1931.

The present illness began, Oct. 31, 1929, with vertigo and weakness. His parents noted a peculiar yellow of his skin. The temperature was elevated to 104.5 F. He did not vomit. There was neither sore throat nor coughing. The urine and stools were dark. The temperature remained elevated, between 101 and 103, and when I saw him two days later it was 102 F. At that time he complained of a peculiar, full, pulling sensation along the left costal margin.

Physical examination revealed jaundice, pallor of the mucous membrane of the mouth and tongue, and an enlarged tender spleen extending to the umbilicus. At the University Hospital the following studies were made: hemoglobin 8.5 Gm., erythrocytes 3,150,000, white cell count 5,050 (chart 1). The differential count was normal. There was a variation in the size of the red cells. Free hydrochloric acid was found in the gastric secretion. The urine was strongly positive for urobilin. The icteric index was increased. There was increased fragility of the erythrocytes to hypotonic sodium chloride solution. The initial hemolysis began at 0.52 per cent and was complete at 0.38 per cent (chart 3), and the diagnosis of chronic hemolytic jaundice was made. Because of the similarity of pernicious anemia, one vial of liver extract-Lilly was prescribed orally, three times a day. This therapy was followed by definite improvement, so that at the end of a month the patient felt stronger, the red blood count had risen to 4,150,000, and the hemoglobin to 10.5 Gm. (chart 1). A surgical consultant at that time advised against surgery. The patient continued to take three vials of liver extract daily without medical supervision for eighteen months and felt well, having had no attacks during the latter period. Liver was then discontinued and later he consulted an osteopath because of a recurrence of symptoms.

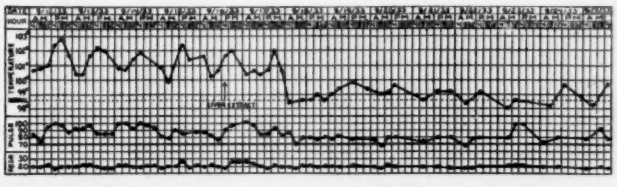


Chart 4.—Temperature, pulse and respiration rate in case 2.

May 18, 1932, ten months after the liver had been discontinued, he was readmitted to the University Hospital because of mental confusion, prostration and fever. Three days prior to admission he was suddenly seized with vomiting. He became markedly jaundiced, had a temperature of 104 F. and was seen by Dr. Marsh, who referred him to the hospital. There was marked evidence of dehydration, definite jaundice and a temperature of 104 F. The spleen was very tender and extended to the umbilicus and nearly to the crest of the ilium. The examination of the blood at that time revealed erythrocytes 1,415,000, hemoglobin 5 Gm. (Haden-Hausser) (chart 1), white blood count 2,475, volume index 0.922, volume per cent 11.5, icteric index 18. The urine was strongly positive for urobilin. No bile was found in the urine. The stools were dark brown. The blood Wassermann reaction was negative. Three cubic centimeters of solution liver extract-Lilly (derived from 15 Gm. of liver) was given intramuscularly daily for ten days and then one vial of liver extract-Lilly powder given orally three times a day. At the end of a month the blood count was as follows: erythrocytes 3,545,000, hemoglobin 10.5 Gm. (Haden-Hausser) (chart 1), white cell count 7,000, the differential count normal. The patient's strength returned and he has been free from complaints from that time until the present. He has continued to take liver extract-Lilly by mouth and has had no recurrence of the attack. However, during the fall of 1933, on the advice of a friend, he began to take four capsules of Extralin three times a day instead of one vial of the powdered liver extract three times a day. In February 1934 his parents noted that his color was not as good as formerly. Examination of the blood at that time revealed erythrocytes 3,510,000, hemoglobin 11.5 Gm. (Haden-Hausser) (chart 1), white blood count 8,700, volume index 1.022, volume per cent 31.5, icteric index 30, differential count normal, and reticulocytes 5.0 per cent. In the fragility test hemolysis began at 0.50 per cent and ended at 0.38 per cent (chart 3). Three

cubic centimeters of Lederle solution liver extract parenteral refined and concentrated (derived from 100 Gm. of liver) was given at weekly intervals, with a definite improvement in the patient's appearance and strength. The red blood count and hemoglobin have improved. The indirect van den Bergh reaction, the icteric index, and the size of the spleen have remained unchanged. Repeated studies of the erythrocytes for evidence of increased fragility to hypotonic sodium chloride solution have revealed a persistent diminished resistance of the cells. There was no agglutination of the patient's cells by his serum with the Widal, Abrami and Brulé test.

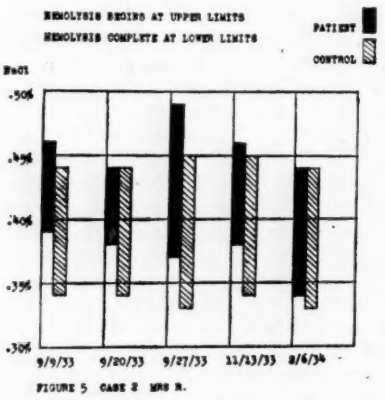


FIGURE 5 CASE 2 MRS R.

Chart 5 (case 2).—Fragility of erythrocytes to hypotonic sodium chloride solution.

The serum cholesterol was 67 mg.

CASE 2.[9]—Mrs. R., aged 31, an Italian housewife, admitted to the medical service of the University Hospital, Sept. 5, 1933, complained of severe epigastric pain, radiating to both quadrants of the upper part of the abdomen, of ten days' duration.

The family history was unimportant. The patient was born in Italy, was married at the age of 14 and had given birth to five normal children. Her general health had been good except for the following: In October 1931, at the University Hospital, the gallbladder was removed for chronic cholecystitis and cholelithiasis. At that time no anemia was found, the icteric index was 50 and urobilin and bile were found in the urine. Pain in the upper part of the abdomen continued and she returned to the hospital, July 11, 1932, complaining of nervousness, weakness, pain in the left upper quadrant, and nausea.

Physical examination at that time revealed a palpable, tender spleen. The icteric index was 35, the red blood count 3,740,000, hemoglobin 72 (Sahli), reticulocytes 0.5 per cent, and white blood count 6,250, with a normal differential. Sedimentation time was one hour and seven minutes. Fragility tests of the erythrocytes failed to show any definite abnormality. Other laboratory studies, including blood and spinal Wassermann tests, urine, gastric analysis, cystoscopic examinations, pyelograms and gastro-intestinal roentgenograms, gave negative information.

She improved on a liberal diet, iron and rest in bed. She refused an exploratory examination and was discharged after six weeks with no anemia, an icteric index of 15 and a palpable spleen. The diagnosis of hemolytic jaundice was considered but not definitely proved.

For ten days prior to this entry the patient had noted severe epigastric pain radiating to both upper quadrants of the abdomen, nausea, belching of gas and, on one occasion, vomiting.

Physical examination showed temperature 101 F., pulse 90, respiration rate 22 and definite icterus. There was marked tenderness without spasm over the epigastrium, the spleen was palpable three fingerbreadths below the left costal margin.

Laboratory examination showed: red cell count 4,540,000, volume per cent 38.5, volume index 0.96, icteric index 15, reticulocytes 1.7 per cent, white cell count 8,000, differential normal, indirect van den Bergh reaction positive, blood cholesterol 90 mg. The urine showed urobilinogen in a dilution of 1 to 30. Initial hemolysis of the erythrocytes began at 0.46 per cent and was complete at 0.39 per cent (chart 5).

Liver extract, 2 cc. (derived from 10 Gm.) daily, was given intramuscularly from September 16 until October 21; thereafter, 3 cc. (derived from 100 Gm.) of concentrated liver extract was given once a week until her discharge, November 27. The temperature approached normal, September 17, and was normal thereafter (chart 4). Sixteen examinations of the urine for urobilinogen and bile after institution of liver therapy were negative. Fragility tests, September 27, showed the initial hemolysis at 0.48 per cent and complete at 0.37 per cent (chart 5). October 20, the icteric index was 12 and the indirect van den Bergh test showed a faint positive reaction. November 6 the blood cholesterol was 160 mg. and the icteric index 8. November 13 the following observations were made: red cell count, 5,240,000; hemoglobin, 16 Gm.; white cell count, 5,950; normal differential count; reticulocytes, 1.2 per cent. The spleen was palpable two fingerbreadths below the costal margin; the liver was not palpable. There was no jaundice.

She was discharged from the hospital November 19 and readmitted Jan. 30, 1934, complaining of nervousness and pain in the left upper part of the abdomen. One week before she had had tonsillitis and had had no liver extract for two weeks. On examination the patient was suffering acutely from severe pain in the upper part of the abdomen, the throat was slightly reddened, the temperature was 101.8 F., the pulse 110 and the respiration rate 32; there was no apparent icterus, and the spleen was palpable and tender. The red cell count was 4,100,000, the hemoglobin 78 per cent (Sahli), white cell count 9,300, with a normal differential count. The urine was positive for urobilin in a dilution of more than 1 to 20; there was no bile. Liver extract (3 cc. concentrated) was given February 1 and thereafter once a week. Subsequent to one injection of liver extract, urobilinuria disappeared and on February 7 the red cell count was 4,510,000, the hemoglobin 12 Gm. February 20, a mild attack of complicating obstructive jaundice developed; the icteric index rose to 19, bile was present in the urine, the van den Bergh test showed a faint immediate direct reaction. There was no agglutination of the patient's cells by her serum with the Widal, Abrami and Brulé test. The patient was discharged from the hospital, March 14, feeling well; the icteric index was 9. Intramuscular liver extract (3 cc. concentrated) was prescribed to be given once a week at home. On May 20 the patient reported that she had had none of her former symptoms since her discharge from the hospital, two months before, and that she was better than she had been for a year.

CASE 3.—Mrs. K., aged 41, Polish, admitted to the University Hospital Jan. 13, 1934, complained of pain in the upper part of the abdomen of six months' duration.

The family history and marital history were irrelevant. The patient was born in Poland and had come to this country one year before. Dec. 8, 1933, she was admitted to the University Hospital because of vague pain in the upper part of the abdomen and obstipation. At that time the physical examination was negative except for a firm tender mass in the left upper quadrant, considered to be spleen. She was given an edema, felt relieved and signed her release before adequate studies could be made. No parasites or ova were found in the stool.

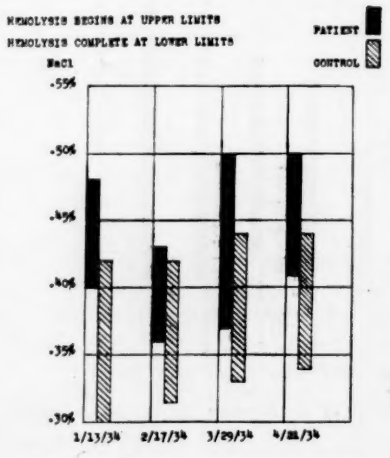


Chart 6 (case 3).—Fragility of erythrocytes to hypotonic sodium chloride solution.

The present illness began in July 1933, at which time she first noted epigastric distress, made worse by eating. Occasionally during the past two or three months she had had a "yellow color," frequently had noted chills and passed dark colored urine.

The patient appeared chronically ill with slight icterus. The edge of the liver could be palpated and the spleen was definitely enlarged, firm and tender.

Laboratory examination revealed the red cell count 3,775,000, white cell count 7,300, normal differential, volume per cent 30, hemoglobin 11.9 Gm., volume index 0.90, icteric index 20. The van den Bergh test showed a positive indirect reaction. The

9. The studies in cases 2 and 3 were aided by a grant from the Hendrick's Research Fund of the Syracuse University College of Medicine.

stained blood films showed the red cells to be well filled, presenting, however, a diffuse microcytosis. Fragility tests showed the initial hemolysis at 0.48 per cent and complete at 0.40 per cent (chart 6). The urine was negative except for an increase of urobilinogen. The Ewald test meal revealed normal acid values. No abnormal changes were noted in repeated stool examinations. The blood chemistry was normal except for a cholesterol of 111 mg. The Wassermann and Kahn reactions of the blood serum were negative. There was no agglutination of the patient's cells by her serum with the Widal, Abrami and Brulé test.

The patient was given 3 cc. of concentrated liver extract intramuscularly (derived from 100 Gm. of liver) on February 12 and weekly thereafter. February 17, fragility tests showed initial hemolysis at 0.43 per cent and complete at 0.36 per cent. She improved steadily and was discharged, March 14, without symptoms, although the spleen was still palpable; the icteric index was 7. Twelve days later (March 26) she was readmitted to the hospital, complaining of epigastric pain and vomiting of three days' duration. While at home she had failed to receive one of the weekly injections of liver extract. Examination showed definite icterus; the temperature was normal on admission, rose to 100.6 F. (rectal) on the second day and then returned to normal. The liver and spleen were palpable and tender. The red cell count was 3,592,500, hemoglobin 10.2 Gm., white cell count 8,200, volume per cent 30, volume index 0.94, reticulocytes 4.5 per cent, and icteric index 64. The van den Bergh test gave a strongly positive immediate direct reaction. Smears did not appear remarkable, although occasional microcytes were noted. The urine showed a strongly positive reaction for bile and urobilin. Intramuscular liver extract (3 cc. concentrated) once a week was resumed. A diagnosis of complicating obstructive jaundice was made. March 30 there was no pain or vomiting; the icterus was decreased. No clay colored stools were noted. The icteric index was 23. The van den Bergh test showed a faint immediate direct reaction. The urine gave a faint positive reaction for bile. The fragility test showed initial hemolysis at 0.50 per cent and complete at 0.37 per cent (chart 6). Urobilinogen was strongly positive. Fragility tests, April 20, showed initial hemolysis at 0.50 per cent and complete at 0.41 per cent (chart 6). May 10, the blood counts were as follows: red cell count, 4,800,000; hemoglobin, 13.5 Gm.; white cell count, 10,900.

COMMENT

Three patients with chronic hemolytic jaundice were treated with liver extract. In one case, prior to liver therapy, which was instituted in 1929, an acute hemolytic crisis occurred every two to three months. Since then no crises have occurred except one which happened during a period when liver therapy had been discontinued. While there has been an improvement in the patient's strength, appearance and the anemia, nevertheless the increased icteric index, urobilinuria and increased fragility of the red cells to hypotonic sodium chloride solution have persisted.

In the two other cases an improvement in the patient's strength and appearance was noted and the laboratory studies revealed a disappearance of a mild anemia, urobilinuria and clinical jaundice; the increased fragility of the erythrocytes, however, was essentially unaltered. While we believe that splenectomy offers the most hopeful therapeutic procedure in the more severe cases of chronic hemolytic jaundice in which no causative factors can be demonstrated, it would appear that treatment of such individuals with liver extract may have a beneficial effect. It will be noted that liver therapy was instituted during the acute period of the crisis and that there was definite clinical improvement in the patients. While we feel that liver was of value in these instances, we appreciate the fact that spontaneous remissions do occur and for that reason feel that more work must be done to prove that liver treatment will actually affect the course of the acute episodes. We suggest that liver extract may be of benefit in those individuals who are unfavorable surgical risks, who refuse operation, or in whom it is decided that the disease is not sufficiently incapacitating to warrant surgical intervention. It is also possible that if surgery is anticipated, or if the patient is in the stage of an acute hemolytic crisis, liver extract may considerably improve the clinical picture and make the individual a better surgical risk or possibly shorten the incapacitating period of the crisis.

SUMMARY

Three cases of chronic hemolytic jaundice were treated with liver extract and all showed definite clinical improvement. In one case, treated since 1929, clinical improvement without recurrence of a crisis occurred during treatment but the increase in the icteric index, urobilinuria and increased fragility of the erythrocytes persisted despite the improvement in the anemia. The two other cases, similarly treated, showed no definite and sustained increase in the resistance of red blood cells to hypotonic sodium chloride solution, but the disappearance of a mild degree of anemia, clinical jaundice and urobilinuria were noted.

It is felt that further observations as to the effect of liver therapy in chronic hemolytic jaundice are necessary before definite conclusions can be drawn. It is recommended that such therapy be given a trial and that careful detailed blood studies be made during the observations, together with similar observations on untreated cases.

109 South Warren Street.

THE TREATMENT OF HEMOPHILIA

HAROLD W. JONES, M.D.
AND
LEANDRO M. TOCANTINS, M.D.
PHILADELPHIA

It is 130 years since hemophilia was first observed and accurately described by Otto.[1] The progress in its therapy has been slow and full of disappointments. This report will deal with a review of the methods of treatment of the condition at the disposal of the physician today. It is based partially on observations made on twelve hemophilic patients at various times over a period of seven years.

For the purpose of this discussion, hemophilia is defined as an inherited or noninherited tendency of males to bleed, characterized by the presence of a prolongation of the coagulation and prothrombin time of the venous blood. Cases of hemophilia in which a history of inheritance is not obtainable are included. Five of our patients fall in this group, although four of them have brothers similarly affected. Instances of so-called sporadic hemophilia are about as frequent as those in which a clear-cut history of inheritance can be obtained, which may indicate that the defect is sometimes atavistic.

From the Department of Medicine of Jefferson Medical College.
Prepared under a grant from the J. Ewing Mears Research Foundation.
Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Otto, J. C.: An Account of a Hemorrhagic Disposition Occurring in Certain Families, Medical Repository **6**: 1, 1803.

The treatment of hemophilia may be divided as follows:

A. Preventive:
   1. Prevention of the transmission of the disease.
   2. Prevention of the accidents that usually precipitate the onset of a phase of hemorrhage.

B. Treatment of the condition itself:
   1. Attempts to influence the general course of the disease or permanently change the fundamental defect of the blood; i. e., the coagulation factors.
   2. Treatment of an acute hemorrhagic phase:
      (*a*) General.
      (*b*) Local.
   3. Treatment of complications.

CRITERIA OF IMPROVEMENT

A statistical evaluation of the merits of any form of treatment is almost impossible because of the rarity of the disease. To judge the effectiveness of any measure we feel that the following criteria are useful:

1. Changes in the course of the disease in general may best be gathered from the patient's own history of increase or diminution in frequency and severity of the attacks of bleeding and the acute joint disturbances. Determinations of the venous and capillary clotting time give little idea of the progress of the disease, so they are not of practical use from this standpoint. We have observed patients enjoying comparative freedom from bleeding for six months or longer and yet their venous clotting time was continuously prolonged (two hours or more). On the other hand, it is common to find relatively short, almost normal, venous and capillary clotting times during the acute phase of bleeding.

2. Whenever blood transfusion is used to prepare the patient for a surgical procedure, the venous clotting time may be relied on as an indication of its effectiveness. Capillary clotting time determinations, unless done according to the technic of Gibbs [2] and Christie,[3] are worthless as an index of the blood-tissue reaction in coagulation.

3. During the acute phase, the presence or absence of bleeding and its degree as measured objectively, or indirectly by hemoglobin and red blood cell estimation, should be the only criterion of improvement. In other words, during a phase of bleeding all measures should be directed toward its cessation with or without evidence of control of the blood clotting time. Often too much stress is placed on reducing the clotting time and sight is lost of the fact that measures other than blood transfusion designed to reduce the rate often fail to affect or may even increase the bleeding. Hemostasis, even in a hemophilic patient, is not synonymous with reduction of the coagulation factors to normal levels. During phases of bleeding, other factors, perhaps of a vascular nature, play a part in accentuating the hemophilic individual's tendency to bleed. This is best illustrated by the frequent detection of a prolonged skin bleeding time during these phases. The following case illustrates increased skin bleeding time:

L. M., a hemophilic man, aged 23, was admitted to the Jefferson Hospital on the verge of collapse after a fall. There was a hematoma the size of a grapefruit in the right thigh, and other extensive hemorrhages were noted in both legs. The pulse rate was 140 and of filiform character. The hemoglobin (Sahli) was 45 per cent, the erythrocyte count was 2,450,000, the platelet count was 488,000, the venous clotting time was thirty-eight minutes; the skin bleeding time was seven minutes and the tourniquet test +. Two days later the general condition was unchanged, the hemoglobin was 35 per cent, the erythrocytes numbered 2,040,000, the platelet count was 360,000, the venous clotting time 172 minutes, the skin bleeding time was six minutes and the tourniquet test +. Three days later the general condition was unchanged, but the hemoglobin was 33 per cent, the erythrocyte count was 1,910,000, the platelet count was 566,000, the venous clotting time was 160 minutes, the skin bleeding time was thirty minutes and the tourniquet test + 4. At the end of four days the pulse was normal, the general condition was good, the hemoglobin was 40 per cent, the erythrocyte count was 2,410,000, the platelet count was 538,000, the venous clotting time was 188 minutes, the skin bleeding time was 1 hour and the tourniquet test + 4. There were only slight changes in these readings for the following three days; the general condition remained good. On the eighth day the hemoglobin was 48 per cent, the erythrocyte count was 2,970,000, the platelet count was 716,000, the venous clotting time was 176 minutes, the skin bleeding time was one minute and the tourniquet test was negative. There was gradual improvement in the patient's general condition and no bleeding occurred from this time on.

PREVENTIVE TREATMENT

Since many of the cases exhibit a clear-cut history of inheritance, the sisters of patients with hemophilia and the patients themselves should be made acquainted with the mechanism of inheritance and told of the great likelihood of their having "bleeders" in the family. The number of children in a family of hemophilic individuals is unusually large. In our series the average number of children born from transmitters of hemophilia was 5.3 (69 per cent male, 31 per cent female); 80 per cent of the males were bleeders. There does not seem to have been any attempt to curb procreation, owing probably to a lack of clear understanding on the part of the hemophilic individuals as to the manner in which the defect is transmitted. The fact that the condition often skips a generation tends to make them incautious and to trust to chance. Birch found that both the individuals with hemophilia and the transmitters seem to have families a little above the average in number.[4] Furthermore, the transmitters of hemophilia have more sons than daughters, while persons with hemophilia have more daughters than sons.[4] In this fashion nature appears to make sure of the perpetuation of the disease. Since not all daughters of transmitters are themselves transmitters and there is no known method of detecting them aside from reproduction, the problem of the control of the disease from the eugenic standpoint is a difficult one. All daughters of hemophilic males are carriers and should not reproduce.[5]

PROPHYLAXIS

With the knowledge that the hemophilic individual is more easily affected by trauma than the normal, he should be cautioned against engaging in strenuous occupations or undergoing operative procedures without the proper preparation. It would be well for an individual with hemophilia to carry a document stating clearly the condition from which he is suffering, in order that he may be properly protected if he is rushed unconscious to a hospital or physician's office. This means of identification could be sewed to a prominent part of the inner clothing.

2. Gibbs, O. S.: A Clinical Blood Coagulometer, Quart. J. Med. **17**: 312 (April) 1924.
3. Christie, R. V., and Gulland, G. L.: Studies in Blood Coagulation and Haemophilia: The Treatment of Haemophilia, Quart. J. Med. **20**: 499 (July) 1927.
4. Birch, C. L.: Hemophilia, J. A. M. A. **99**: 1566 (Nov. 5) 1932.
5. Macklin, M. T.: Heredity in Hemophilia, Am. J. M. Sc. **175**: 218 (Feb.) 1928.

Preoperative Preparation.—If operative intervention is indicated, there are two methods to which one may resort to prevent undue hemorrhage:

1. Preliminary blood transfusion is known to reduce the clotting time for a period of from two to six days. Blalock [6] performed a successful amputation of the arm in a hemophilic individual, and a cholecystectomy was done in one of the patients in our series after several blood transfusions had been resorted to.

2. Protein sensitization has been advocated since Vines [7] discovered its effect in increasing the coagulability of the blood. Mills,[8] Marlow,[9] Eley and Clifford [10] recommend it. The method consists in sensitizing the patient by intramuscular injection of 3 or 4 cc. of a foreign protein (sheep or hen serum preferably) after the usual preliminary test of sensitivity by intradermal injection of a drop of the serum. Two weeks later one drop of the serum first used is injected intradermally. The appearance of an urticarial wheal indicates sensitivity. Mills found a marked improvement in the blood coagulability and the reaction of the prothrombin to be much more normal especially toward cephalin after this treatment.[11] The intradermal injections should be repeated at intervals of several weeks to determine the sensitivity to the protein. This sensitivity usually lasts a year. Eley and Clifford tried the method in eight hemophilic children. They found that the coagulation time of the capillary blood was definitely shortened but that that of the venous blood remained unaltered. They did not consider the treatment to have any value in controlling hemorrhage from the larger blood vessels or in preventing the occurrence of hemorrhagic effusions into joints, subcutaneous hematomas or intestinal bleeding, but they were convinced of the benefit of the method in the prevention or control of bleeding from superficial injuries. It is probable that any beneficial effect brought about by this method comes from changes in the blood vessels. Two of our patients were given this treatment for one year with no significant change in any aspect of the disease.

Weil [12] advises intramuscular injections of 30 cc. of fresh serum one or two days before the operation. Intravenous injection of whole compatible human blood, citrated or noncitrated, one day or a few hours before the operation is just as satisfactory. The intravenous injection of blood has been shown to bring to normal the retarded rate of transformation of prothrombin into thrombin in as short a time as thirty minutes after it is given.[13] It is therefore important that the blood group of every hemophilic patient should be known and a suitable donor kept available during and after any operative procedure. Throughout the first decade of life, with its many accidents and changes in dentition, these precautions are especially indicated.

Operations in general should be avoided but, when performed, hemostasis should be painstakingly cared for. It is helpful to ligate each piece or section of tissue before incising it and to use fresh serum to dress the wound. The usual accidents to which children are exposed should be avoided. The operations of circumcision and incision of the frenulum should not be undertaken.

Diet.—Some advise the use of a high protein diet. It has been observed that an increased coagulability of the blood takes place for a period of one to four hours following a meal rich in protein in normal human beings.[14] It has not been demonstrated, however, that this diet is beneficial in hemophilic patients. Kugelmass [15] has observed no changes in the concentration of the clotting substance in patients with hemophilia after a diet high in protein. Neither has any improvement been observed following the ingestion of any of the known vitamins.[16] In our experience high protein or high fat diets have not affected the hemorrhagic phase appreciably.

Purges.—The use of drastic purges is undesirable, and some patients believe that a purge induces an attack of hemorrhage.[3] However, Otto [1] recorded the fact that there was a general belief among the hemophilic families he had studied that purging by sodium sulphate was beneficial.

Focal Infection.—The removal of foci of infection is desirable, particularly in view of its effect on the course of the arthritis and in improving the general condition of the patient. That infection bears relationship to the attacks of bleeding is disputable, since many attacks appear in the absence of infection and a number of our patients have gone through acute infections with very slight or no manifestations of bleeding. Dental extractions or other operations should not be attempted, of course, without the proper preparation as described.

Some of our patients have stated that immobilization in bed for long periods of time has increased the hemorrhagic tendency. One patient affirmed that a number of attacks of hematuria lasting several weeks had followed emotional shocks.

TREATMENT OF THE CONDITION ITSELF

By treatment of the condition itself is meant any attempt to change the fundamental defect (the prolonged coagulation and prothrombin time of the blood) or to diminish the incidence and severity of the manifestations associated with the condition. So far we have remained unconvinced of the value of many advocated measures. We have tried a few. Ovarian extract from different makers, in small and large doses, orally and intramuscularly, was used in four of our patients, and no changes were noted in any aspect of the disease. Previous reports of beneficial results following ovarian therapy were not based on the use of proper criteria. The work of recent observers fails to substantiate the claims.[17] So far we must content ourselves to explain the almost absolute limitation of the disease to males on the basis of the laws of heredity, rather than on the hypothetical, disproved [18] assumption

6. Blalock, Alfred: Amputation of Arm of Patient with Hemophilia, J. A. M. A. **99**: 1777 (Nov. 19) 1932.
7. Vines, H. W. C.: Anaphylaxis in the Treatment of Haemophilia, Quart. J. Med. **13**: 257 (April) 1920.
8. Mills, C. A.: Hemophilia, J. Lab. & Clin. Med. **17**: 932 (June) 1932.
9. Marlow, A.: Negative Effect of Administration of Liver in Hemophilia, Bull. Johns Hopkins Hosp. **49**: 49 (July) 1931.
10. Eley, R. C., and Clifford, S. H.: Hemophilia: Treatment by Protein Sensitization, Am. J. Dis. Child. **42**: 1331 (Dec.) 1931.
11. Mills, C. A.: Blood Clotting Studies in Hemophilia, Am. J. Physiol. **76**: 632 (May) 1926.
12. Weil, P. E.: Nouveau traité de médecine, Paris, Masson & Cie **9**: 473, 1927.
13. Feissly, R.: Recherches expérimentelles sur la correction in vivo de la coagulabilité sanguine chez l'hémophile, Bull. et mém. Soc. méd. d. hôp. de Paris **48**: 1739, 1924.
14. Mills, C. A.: Effect of Food Ingestion on the Clotting Time of the Blood, J. Biol. Chem. **55**: 18, 1923. Mills, C. A.; Necheles, H., and Chu, M. K.: Relation of Clumping and Disintegration of Platelets to Body Metabolism, Chinese J. Physiol. **2**: 219 (April) 1928.
15. Kugelmass, I. N.: Mechanism of Hemophilia in Infancy and Childhood, Am. J. Dis. Child. **44**: 50 (July) 1932.
16. Kugelmass.[15] Marlow.[9]
17. Stetson, R. P.; Forkner, C. E.; Crew, W. B., and Rich, M. L.: Negative Effect of Prolonged Administration of Ovarian Substances in Hemophilia, J. A. M. A. **102**: 1122 (April 7) 1934. Brem, Jacob, and Leopold, J. S.: Ovarian Therapy; Relation of Female Sex Hormone to Hemophilia, J. A. M. A. **102**: 200 (Jan. 20) 1934.
18. Brem and Leopold.[17] Brown, R. L., and Albright, F.: Estrin Therapy in Case of Hemophilia, New England J. Med. **209**: 630, 1933.

that the defect is present in the female but kept in check by ovarian hormones. Splenic and thyroid extracts were likewise of no immediate or remote value.

Course.—The disease seldom makes its appearance until several weeks after birth, and from then on until maturity the attacks of bleeding occur at intervals, probably more often in the latter half of the first decade. The preference of the hemorrhages for the joints and

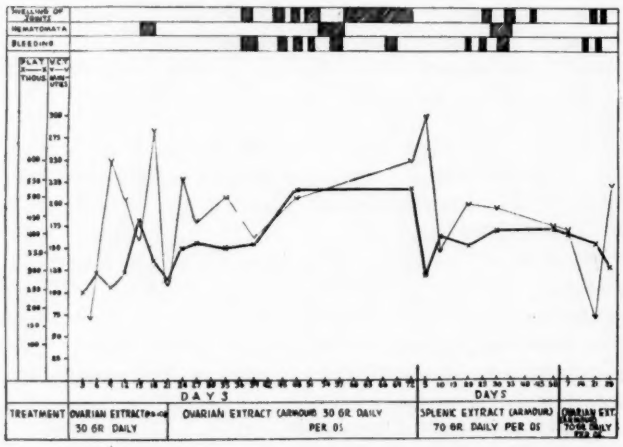


Chart 1.—Effect of the administration of two organ extracts to a hemophilic individual (S. M.). There was an interval of at least two weeks between courses. *Plat.*, platelets; *V. C. T.*, venous clotting time.

muscles during the developmental period leads to deformities and retardation in growth. If the hemophilic individual reaches the third decade, however, his subsequent course is comparatively safe, as the incidence of attacks of bleeding decreases considerably. The grandfather of one of our patients, known to have hemophilia, died at the age of 60. The venous coagulation time, however, remains unaltered, which again exemplifies the fallacy of using this determination as an indication of the progress of the disease. The disease therefore follows a fairly definite course and its manifestations decrease in severity as the patients grow older. This phase of the present discussion may therefore be dismissed with the statement that there is no method known at present that is of undisputable, permanent value in altering the general course of the disease.

TREATMENT OF AN ACUTE PHASE OF BLEEDING

General Treatment.—Here the therapeutic measure *par excellence* is the transfusion of blood, unmodified or citrated. Sometimes as small an amount as from 30 to 50 cc. is enough to check the bleeding and reduce the coagulation time.[19] It should be stressed again that the index of effectiveness of any measure used in an acute phase is the production of hemostasis and not the changing of the coagulation time. Large hematomas may be produced by punctures of veins during these phases. This can be avoided by the quick application of pressure and its continuation for at least one hour. Too often a hematoma interferes with the use of a vein for a much needed transfusion. Great care should be taken in having the blood cross-matched. Citrated blood is equally efficacious,[3] but reactions are more frequent.

The improvement resulting from a blood transfusion lasts between two and six days when given in the usual dosage. In children we have found that intraperitoneal transfusions are of equal benefit. This method is especially to be preferred when difficulties are experienced with the intravenous method, since the introduction of partially clotted blood may aggravate the symptoms. Intraperitoneal transfusion is not indicated in an emergency arising from hemorrhage. Blood must be transfused into a vein; the absorption of intraperitoneally injected blood is too slow to be helpful.

The intravenous or intramuscular administration of various serums (sheep serum, horse serum, hemostatic serum), autologous blood given intramuscularly, or the use of calcium, ergot, peptone, parathyroid extract, thromboplastic substance or tissue fibrinogen have proved of little value in our hands. Estrogenic substance was given to two of our patients and, like others,[18] we found no changes in the course of the disease following its administration. We suggest that the administration of these drugs in hemophilia should be discontinued, since their use involves delaying the employment of measures of proved value.

If the patient is or has been made sensitive to a certain serum, a small desensitizing dose given intradermally is said to check the bleeding.[8] We have had no experience with this type of therapy in the acute phase. However, in other hands,[3] and even in one of Vines' cases,[7] it was followed by negative results.

Local Treatment.—The problem of stopping the bleeding is simplified if the area is accessible. Intestinal or urogenital bleeding cannot be treated by local measures. The other commonest sources of the bleeding are in the joints and muscles, from the oral mucous membrane and deep skin cuts. When the bleeding is taking place in the joints or muscles, immobilization of the part is indicated, but the application of icebags and compression is of very little use. The following remarks apply to the control of bleeding in the accessible portions of the body, such as the skin and subcutaneous tissue, and oral, rectal or nasal mucous

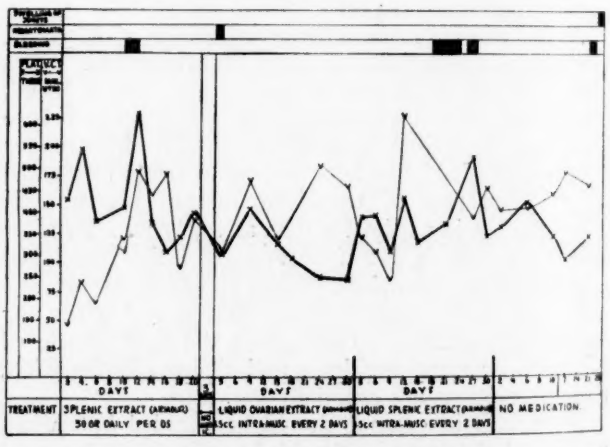


Chart 2.—Effect of administration of two organ extracts to a hemophilic individual (L. M.). There was an interval of at least two weeks between courses.

membrane. The measures to be employed may be grouped under the following heads:

1. Pressure is sometimes helpful, particularly when combined with other measures to be specified later. In order to be of any help it must be applied for one hour or longer. This may require special bandages, particularly when the bleeding is in difficult situations, such as in the oral mucous membrane. A "pyramidal" pack (a series of superimposed small gauze layers)

19. Bernheim, B. M.: Blood Transfusion, Hemorrhage and the Anemias, Philadelphia, J. B. Lippincott Company, 1917, p. 202.

was effective in checking the bleeding from a tooth socket; the sponges next to the bleeding area hold the hemostatic agent, and pressure is applied on the entire pack.

2. Various substances may be applied to the bleeding area. The substances most generally employed are considered to accelerate clotting or to act as astringents. Fresh serum (not over three hours old) is perhaps the best. Monsell's solution (a styptic solution of basic ferric sulphate or subsulphate) is too escharotic to be of value. Tannic acid powder is sometimes effective. One of the difficulties is in keeping the material to be added in sufficient concentration to be effective, as the outcoming blood rapidly dilutes it. A good plan is to surround a gauze pyramidal pack soaked with the material with a rubber dam and apply digital pressure on it, renewing the medicated gauze at intervals. Another plan is to place tannic acid powder over the area, apply pressure for about five minutes, then rapidly cover it over with cotton soaked in Whitehead's varnish (Turlington's balsam [compound tincture of benzoin] made with ether and saturated with iodoform). On drying, it forms a tight, rubber-like coating over the part. Before any substance is applied all useless clots should be carefully removed, but rubbing is to be avoided.

3. Cauterization by the electrocoagulation method may be attempted in small areas. In our series it was of occasional benefit. This is especially applicable to areas less accessible to pressure and medication. The cauterization should be superficial only.

4. Material may be injected directly into the bleeding area. Fresh serum has been used in this manner with a needle of very small bore (27 gage) and long bevel.

Thromboplastic substance, horse serum, coagulose, tissue fibrinogen, and ceanothyn have been used at various times with little or no success.

TRIAL OF OTHER METHODS OF TREATMENT OF AN ACUTE ATTACK

The intravenous injection of defibrinated blood has been tried [20] and was followed by some improvement. By this method large amounts of thrombin are made available to the patient. It should prove useful when difficulty is met in finding a suitable donor. A small amount of blood, from 40 to 50 cc., can be removed from the patient, immediately defibrinated, and reinjected intravenously. The injection of whole blood, 20 cc. intramuscularly, has proved valuable in a few instances.

Injection of Antiplatelet Serum.—One of us (L. M. T.), following what appeared to be a rational deduction from the known pathology of the disease, gave intradermal injections of antiplatelet serum to three hemophilic patients, two of whom were going through a phase of bleeding. Several facts seem to lend support to this type of therapy:

1. The known greater resistance of the platelets of hemophilic blood.[21]

2. The disintegration of blood platelets, which leads to the liberation of prothrombin and thromboplastic substance.[22]

3. The many points of antagonism between hemophilia and thrombopenic purpura.

As a result of the injections a shortening of the venous coagulation time was sometimes detected, but no prompt and permanent cessation of the bleeding followed. In one of the patients a thrombopenia was produced during which the venous coagulation time was three times as prolonged as before.

TREATMENT OF THE COMPLICATIONS OF THE DISEASE

A severe anemia is sometimes present as a result of the prolonged bleeding. When bleeding ceases, the anemia yields readily to diet and iron. Hemophilic patients appear to have an accelerated rate of blood production. We have been impressed by the rapidity with which they recover from the effects of a severe hemorrhage. Sometimes they exceed the normal levels for hemoglobin and erythrocytes. On two occasions between the phases of bleeding two of our patients showed erythrocyte counts of more than 6,000,000 and hemoglobin of 110 per cent.

Other complications belong in the field of general and orthopedic surgery.[23] It goes without saying that any hematoma, no matter how large, and any swollen joint, should not be opened. The part should be placed at rest by the use of a splint or by a plaster-of-paris bandage, until the swelling and pain disappear. Aspiration of a joint has its dangers [24] and it is best practiced only after proper preparation and then with a needle of small bore. After the acute symptoms have subsided, heat, gentle massage and passive motion are indicated. Hemophilic children do better if removed to a dry temperate climate where chronically inflamed joints are not subjected to so many acute exacerbations. The removal of infected teeth and tonsils after suitable precautions reduces the disability.

SUMMARY

1. In view of the prominence of the hereditary character of hemophilia, an effort should be made by eugenic methods to control its spread. However, in certain cases the occurrence of hemophilia is familial.

2. The number of children in a hemophilic family is considerably greater than that of the average American family.

3. Prophylaxis of attacks of bleeding is attained by the avoidance of trauma and by proper preparation before the undertaking of any operative procedure.

4. Skin bleeding time may be lengthened during the acute bleeding phase.

5. The intravenous transfusion of unmodified blood constitutes the best method for the prevention and treatment of acute attacks of bleeding. Citrated blood produces similar results, but in our hands reactions are experienced more frequently.

6. Intramuscular injection of whole blood (20 cc.) has seemed to benefit some patients.

7. Fresh serum is a satisfactory local hemostatic agent.

20. Sajous, L. T. de M.: Treatment of Hemophilia, New York M. J. **107**: 611, 1918.

21. Fonio, A.: Ueber vergleichende Blutplattchenuntersuchungen, Corr.-Bl. f. Schweiz. Aerzte **48**: 1, 1915; Die Unterkühlungs-Zentrifugiermethode, Ztschr. f. klin. Med. **119**: 687, 1932. Minot, G. R., and Lee, R. I.: The Blood Platelets in Hemophilia, Arch. Int. Med. **18**: 474 (Oct.) 1918. Howell, W. H., and Cekada, E. B.: The Cause of the Delayed Clotting of Hemophilic Blood, Am. J. Physiol. **78**: 500 (Nov.) 1926. Christie, R. V.; Davies, H. W., and Stewart, C. P.: Studies in Blood Coagulation and Haemophilia: Haemic Function in Haemophilia, Quart. J. Med. **20**: 481 (July) 1927.

22. Bayne-Jones, Stanhope: Presence of Prothrombin and Thromboplastin in the Blood Platelets, Am. J. Physiol. **30**: 74, 1912.

23. Key, J. A.: Hemophilic Arthritis, Ann. Surg. **95**: 198 (Feb.) 1932.

24. Petersen, O. H.: Das Blutergelenk und seine Beziehungen zu den deformierenden Gelenkerkrankungen, Arch. f. klin. Chir. **126**: 456, 1923.

8. The trial of defibrinated blood injected intravenously is indicated.

9. Endocrinotherapy, according to our criteria, has been of no value.

10. Any therapeutic measure that diminishes venous clotting time and does not lessen the bleeding phenomena, or even increases them, should be avoided.

11. The use of special diets has proved disappointing.

12. Intradermal injections of antihuman platelet serum was followed sometimes by a marked decrease of the venous clotting time in three hemophilic patients, two of whom were going through an acute phase of bleeding; no prompt and permanent cessation of the bleeding followed the injections.

13. In an acute emergency due to hemorrhage, intraperitoneal transfusion is not indicated. Blood must be injected into a vein.

1930 Chestnut Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GOLDHAMER, BETHELL, ISAACS AND STURGIS, REIFENSTEIN AND ALLEN, AND JONES AND TOCANTINS

DR. ADOLPH SACHS, Omaha: Hemophilia, hemolytic jaundice and pernicious anemia are diseases that have periods of remission and therefore it is difficult to estimate the full value of any form of therapy. Hemophilic patients during their periods of remission, often know without medical aid that they are less liable to bleed. Unless an emergency arises, it is advisable to postpone operative procedures until the patient enters such a remission. I have found that keeping hemophilic patients on a diet rich in vitamins, liver and iron affords the best means of keeping them fit. Mental and physical fatigue should be avoided. These measures will not forestall bleeding, but they give as much promise as any specific therapy thus far offered. Transfusion remains the most efficacious procedure in controlling hemorrhage, but its benefits are evanescent, lasting only from two to six days. Hence it is used only to control hemorrhages or in preparation for an operation. I am interested in the relationship of whole blood iron to whole blood copper. I have shown that, when the whole blood iron decreases, the whole blood copper tends to increase, and vice versa. To date no work on blood iron and copper in hemophilia has been reported. No abnormal relationship between the copper and iron content was present in one case examined. However, the tests were made during a period of remission. I plan to follow these cases during increased bleeding phases. I agree with Drs. Reifenstein and Allen that hemolytic jaundice is more common than the literature indicates. Mistaken diagnoses of gallstones in cases of hemolytic jaundice are commonly made, because 75 per cent of these patients do have gallstones. One of my patients has been on liver and iron therapy and has had no attacks in two years. This form of liver does not contain the factor effective in pernicious anemia, which further demonstrates the difficulty in evaluating any therapeutic response in a disease with normal remissions. It is difficult to determine what form of liver therapy is best suited in each individual case, but most men agree that long and continued use of liver is needed before neurologic changes improve. Patients who stop their liver therapy have relapses, and their neurologic complications soon recur. It is then often difficult to get a second remission. It is interesting to follow the whole blood iron and the whole blood copper in cases of pernicious anemia. As the patient improves, the whole blood iron increases and the whole blood copper decreases. It has been my experience that psychoses improve much more slowly than do the cord changes.

DR. WANN LANGSTON, Oklahoma City: It has been my privilege to follow a case of hemophilia since July 1931, during which time ten distinct plans of therapy have been used with equally unsatisfactory results, except that during a period of administration of theelin, 1 cc. intramuscularly three times a week, the clotting time approached normal and remained so throughout the period. Theelin daily had no effect on the long clotting time. I make this statement, conscious of the frequent spontaneous remissions which these cases exhibit. My experience is limited to the parenteral administration of liver extract in a small group of cases of sickle cell anemia, in which no beneficial effects were observed. Drs. Goldhamer, Bethell, Isaacs and Sturgis in a study of an impressive group of cases arrive at the conclusion that little improvement in neurologic signs can be anticipated in adequately treated cases of pernicious anemia. My experience with a smaller group has impressed me similarly. It is inconceivable that repair can take place to any considerable extent in the degenerated tracts in the cord. On the other hand, it is conceivable that in the early stages of cord involvement, when perhaps there is only edema of the myelin, adequate treatment may arrest the process or even restore the tracts to normal function. Recently, through the courtesy of Dr. W. F. Keller, I have been privileged to follow a typical case of Addison's anemia with mild posterior column signs. With 46 per cent hemoglobin and 1,900,000 red cells, ten 3 cc. doses of a liver extract concentrate were given parenterally in twenty-seven days, when therapy was discontinued, the hemoglobin being 95 per cent and the red count 5,100,000. During the next month the hemoglobin reached 120 per cent, the red count 6,600,000, and during the following four weeks hemoglobin 123 per cent, red count 7,900,000, together with splenomegaly, encephalopathy, vascular crises, and so on. In spite of this remarkable response on the part of the hematopoietic system, the neurologic signs rapidly increased in severity, although the subjective symptoms almost entirely disappeared. In evaluating the efficacy of therapy in relieving neurologic symptoms, one must distinguish if possible between those caused by actual cord damage and the similar symptoms due to local nutritional disturbance; namely, the paresthesias, weakness, and the like. The latter group responds remarkably to adequate therapy, just as the same symptoms in other anemias respond to proper management.

DR. V. P. SYDENSTRICKER, Augusta, Ga.: The variety of remedies for hemophilia is sufficient proof that none are of particular avail. The important thing brought out by Drs. Jones and Tocantins is the advisability of blood transfusion in the presence of hemorrhagic manifestations. It appears that the citrated blood is more valuable than whole blood. A smaller needle will minimize the probability of a hematoma. The changes of the blood resulting from citration may stimulate coagulation. I should like to ask Drs. Reifenstein and Allen two questions. What was the behavior of the reticulocytes during the period of liver therapy, and was there any indication as to the part played by the liver in this particular dyscrasia? In the series of cases reported by Drs. Goldhamer, Bethell, Isaacs and Sturgis the high incidence of neurologic manifestations is a valuable lesson. They are more apt to be overlooked. My experience with pernicious anemia is not large enough for statistical discussion. I feel that pellagra replaces pernicious anemia in the section of the country where I live. It is perhaps roughly analogous as a deficiency manifestation. In addition to giving liver by mouth in pernicious anemia, I would advise a liberal supply of vitamin B_2 such as is furnished in pellagra at the beginning of the neurologic manifestations or before they are seen.

DR. RUSSELL L. HADEN, Cleveland: Drs. Jones and Tocantins have presented a pessimistic view of the treatment of true hemophilia. My experience has been much the same. The best method of treating this condition would be the prevention of the propagation of individuals who can transmit the disease. I have had no experience with the use of liver and liver substitutes in the treatment of hemolytic jaundice. I do not see how such treatment can be of value in true congenital hemolytic icterus. I am convinced that this disease depends on the inheritance of a red cell of a certain shape. It is spheroidal instead of a biconcave disk. The bone marrow is very active in an attempt to keep pace with the excessive hemolysis. Other types of hemolytic jaundice occur that are most difficult to differentiate from pernicious anemia. Here I can see how liver therapy might help. I am optimistic about the prevention and treatment of the neurologic manifestations of pernicious anemia. I am convinced that the neurologic complications need never develop if the patient is cooperative and has been

fully and continuously treated. Intensive therapy will also ameliorate strikingly neurologic symptoms after they have developed. What are the criteria by which adequate treatment in pernicious anemia is determined? I am sure that a patient with a red cell count of only four million has not been adequately treated. With intensive therapy the erythrocyte count should be well above normal. The volume of the cell is certainly the best index of the result of treatment. So long as macrocytosis of the red cells persists, the treatment is not adequate and the deficiency responsible for the disease is not fully met. I have yet to see a patient develop a neurologic lesion if the adequacy of treatment is judged on such a basis. I should like to emphasize what Dr. Sydenstricker has said about vitamin B. There is much to suggest that the neurologic manifestations are related to a vitamin deficiency. I have given my patients large amounts of vitamin B as well as intensive liver therapy. The results of such therapy justify optimism.

DR. JACKSON BLAIR, Cleveland: Drs. Goldhamer, Bethell, Isaacs and Sturgis demonstrated that hog stomach contained an antianemic factor in large amount, and Ungley in 1931 showed that a brain tissue diet produced a reduction of anemia in pernicious anemia, being about 40 per cent equal to liver. Castle demonstrated the value of an extrinsic factor and the lack of a specific intrinsic factor in the stomach of pernicious anemia. He believes that these are important factors in the mechanism of the anemia. But the condition of the stomach in pernicious anemia is not the underlying basis of anemia any more than the condition of the pancreas in diabetes is the primary cause of diabetes. It is the straw that broke the camel's back, the final blow, responsible for the final full-blown picture. It is my opinion that the underlying basis of pernicious anemia is chronic pyelitis in its broadest meaning, and that the chronic loss of granular leukocytes from the body constitutes the reason for the chronic demand for the x-factor lacking in the developed case of pernicious anemia. I believe that Dr. Murphy's recent demonstration of the effect of liver extract on agranulocytopenia gives important additional support to this opinion. In 1930 I presented the theory that the achlorhydria is the end result of a chronic and repeated mild stimulation of gastric secretion associated with a mild chronic infection, myelitis, producing an exhaustion of the secreting mechanism of the stomach from excessive overuse, coupled with an exhaustion from the stomach tissues themselves of an antianemic factor, and responsible for the gastric disorder. If this theory is logical, and if the central nervous system contains a considerable amount of an antianemic factor, then similarly a chronic demand for this substance should exhaust it from these tissues. It follows that the central nervous system lesion represents an injury or scar, and the probability of cure is in rather direct ratio to the probability of cure of the stomach disorder and not directly corresponding to improvement in the blood picture. I agree with Dr. Haden in the treatment he recommends for the neurologic changes. Everything should be done to improve the blood picture. It is essential that the vitamin B complex be also given.

DR. M. A. BLANKENHORN, Cleveland: In discussing the matter with the chairman of the section, I showed him the results of treatment of neurologic complications of pernicious anemia in the medical clinic at Lakeside Hospital. We are of the opinion there, too, that if there is a degeneration of the spinal cord, as shown by objective symptoms, this degeneration cannot be improved. But we are of the opinion that many of the so-called cord symptoms are produced by peripheral neuritis causing acroparesthesia and weakness. These symptoms do recover entirely. Lateral sclerosis with spasticity must be due to a definite cord change. Such spasticity does not disappear, but the patients learn to overcome it. Our form of treatment is physical therapy to overcome spasticity. I am more optimistic about improvement than Dr. Goldhamer and his collaborators are. Improvement comes by reeducation of muscles in overcoming the spasticity. I also think that these authors have not granted a sufficient period to testing the vitamin deficiency theory for the neurologic complications when they say that injections of the vitamin B complex have not cured the disease. Contemplating other deficiency diseases, one would hardly expect that it would. I should like to ask Drs. Goldhamer, Bethell, Isaacs and Sturgis whether their patients who have continued to do badly, regardless of high blood values, have had the type of diet which Dr. Haden describes as excess of vitamin B complex, and how long they have taken it.

DR. LEANDRO M. TOCANTINS, Philadelphia: Dr. Jones and I agree with Dr. Sachs that the hygienic measures are helpful but we doubt that they have any specific effect at all or any permanent effect whatever. We have used theelin, with negative results, during the acute phase of the disease. This point has been gone over by Albright and Brown, who observed no significant changes in the coagulation of the blood after giving enormous amounts of theelin to a hemophilic patient. It seems that most of the disagreement in the literature concerning the effects of various measures is due first to the conception that measures that tend to accelerate the clotting time of normal blood will also accelerate clotting in the hemophilic patient, who has a clotting system all his own. Many measures for accelerating the clotting of normal blood do not affect the hemophilic blood. The reverse is also true. For instance, if a citrated blood transfusion is given to a patient with hemophilia it will shorten his coagulation time. If a citrated blood transfusion is given to a normal individual in adequate amounts, it will generally prolong the coagulation time slightly. The reverse is noticed when tissue fibrinogen is given; it leads to hypercoagulability of normal blood. If given to a patient with hemophilia it does not alter the coagulation. The other concept is that control of coagulation necessarily means control of the bleeding. There are many diseases accompanied by slight or no changes in the coagulation time that show severe bleeding manifestations. One need only look at the thrombopenias with an increased bleeding time, and normal or only slightly delayed clotting time. Blood transfusion affects the skin bleeding time and does not alter the blood clotting time but leads to the cessation of bleeding. These and other facts lead to our belief that hemostasis is not synonymous with control of coagulation of the blood. It depends on extrahemic as well as on hemic factors. This has come to be more and more appreciated with advance in the investigation of diseases of the peripheral vessels by more delicate technical methods.

DR. S. M. GOLDHAMER, Ann Arbor, Mich.: My associates and I had anticipated the objection to the choice of four million red cells per cubic millimeter as being the lower limit of normal and therefore expressed it as an "arbitrary" selection. We are not of the opinion that this is a highly desired level. On the other hand, in the routine examination of patients at the Simpson Memorial Institute, less than 10 per cent of the normal patients ever have a red blood cell count as high as five million cells per cubic millimeter but usually fall in the range between four and five million cells. We have given vitamins to many of our patients with combined degeneration, with no apparent differences in response in those who received vitamins and those that did not. Treatment with vitamins is not the answer to the problem, for multiple types of therapy are being tried, in the absence of specific medicament. As for the kidney being the seat of the difficulty in pernicious anemia, it appears that if this were true the proper type of treatment would be feeding kidney. Furthermore, only 40 per cent of the patients with pernicious anemia had kidney disorder and in those patients in whom the genito-urinary infection "cleared up" the disease pernicious anemia has persisted. If the psychoses present are directly related to pernicious anemia, improvement can be expected when adequate therapy is instituted; however, we have seen cases in which, for instance, schizophrenia is present in addition to pernicious anemia; naturally there is no improvement in this type.

DR. ELLERGY G. ALLEN, Syracuse, N. Y.: Dr. Reifenstein and I agree with Dr. Sachs that remissions may occur in hemolytic jaundice without treatment. However, there is possibly some significance in the fact that in one case, treated continuously with liver extract over a period of four years, there was no occurrence of a hemolytic crisis. In the two other cases, treated over periods of ten months and six months respectively, no hemolytic crisis occurred. The treatment we are now giving our patients is intramuscular liver extract, concentrated, 3 cc. a week. In answer to Dr. Sydenstricker's question about the change in the reticulocyte level, I might

say that in case 1 the reticulocytes fell from 10 to 4 per cent as the anemia improved. As to the action of liver extract or how it may affect the blood picture in hemolytic jaundice, we are unprepared to say. In aswer to Dr. Haden's question about the type of case treated, I think it is fairly certain that the first case presented was, without doubt, a congenital case. It will be recalled that the family history was positive. The father has had recurrent attacks of jaundice for many years. He now has an increased icterus index and his blood cells show increased tendency to hemolysis as estimated by the hypotonic saline solutions. This boy definitely improved when treated with liver extract, whereas prior to treatment he had had a hemolytic crisis occurring every two or three months. Since he has had treatment continuously, he has had no hemolytic crisis and his blood count is improved very much.

RESULTS OF PROLONGED IRRADIATION FOR MALIGNANT CONDITIONS OF PELVIS

INTESTINAL, RECTAL AND BLADDER COMPLICATIONS; SURGICAL TREATMENT

THOMAS E. JONES, M.D.
CLEVELAND

In a previous communication [1] I directed attention to early and late effects of radiation in the rectum and bladder following radium and roentgen irradiation for carcinoma of the cervix. Attention was directed to the importance of differentiating between late reactions and recurring malignant lesions, because further irradiation of the benign condition may cause further insult to the tissue and result in irreparable damage, such as fistulas in the bladder or rectum.

The present study directs attention to a rather new clinical entity [2] that may develop and call for surgical intervention many months or years after complete regression or cure of the cervical cancer. In a series of 520 patients with cervical carcinomas having received radiation therapy at the Cleveland Clinic, there have been seven known cases of benign stricture of the intestine causing obstruction that might easily have been construed as, or confused with, metastatic carcinoma. In five of these cases the obstruction was in a movable segment of the sigmoid and in two cases in the small intestine. All these strictures were observed in patients who had been irradiated for carcinoma of the cervix, but the increasing use of radiation for other conditions necessitating exposure of the intestine may result in similar complications. Subsequent to the radiation therapy no evidence of carcinoma was found in these cases and, judging by present-day standards, none of these patients received excessive irradiation. Since similar methods of therapy are in general use, it seems probable that the incidence of the lesion is greater than is surmised at the present time; and if similar cases have been attributed to metastasis in the past, the mortality statistics relating to metastasis from cervical carcinoma are open to question. Desjardins,[3] in a report of the literature, has called attention to intestinal injury produced experimentally by irradiation.

From the Cleveland Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Jones, T. E.: The Treatment of Carcinoma of the Cervix, J. A. M. A. **99**: 880-883 (Sept. 10) 1932.

2. Collins, E. N., and Jones, T. E.: Benign Stricture of the Intestine Due to Irradiation of Carcinoma of the Cervix Uteri, Surg., Gynec. & Obst. **59**: 644-649 (Oct.) 1934.

3. Desjardins, A. U.: Action of Roentgen Rays and Radium on Gastro-Intestinal Tract: Experimental Data and Clinical Radiotherapy, Am. J. Roentgenol. **26**: 145 (July), 335 (Aug.), 493 (Sept.) 1931.

There are many reports in the literature dealing with the manifestations of acute injury to the intestine following irradiation, both experimental and clinical, but I have not been able to trace any reports on patients who have recovered from the acute symptoms and have later developed the chronic condition herein described. If such cases have been described, this report adds seven cases of intestinal obstruction that developed in patients from eight months to eight years after radiation therapy for cervical carcinoma.

The rate of recurrence of cancer is so high that almost any abdominal or pelvic pain may quite naturally and logically be attributed to malignant extension or metastasis. If the condition actually is a benign stricture caused by irradiation, it is quite obvious that additional x-ray treatment would only aggravate the condition and hasten the end. Therefore, one should always keep in mind the possibility that a patient who exhibits unusual abdominal symptoms, particularly if they simulate intestinal obstruction, several months or even years following radiation therapy, may have a stricture of the intestine and may be restored to normal health by resection of the lesion. Before this disability is attributed to metastasis, thorough reexamination by sigmoidscopic and roentgenographic studies should be made to eliminate the possibility of this curable complication. While roentgen examinations demonstrate lesions in the sigmoid quite readily, strictures in the small intestine are quite difficult to visualize unless the obstruction is practically complete. In this type of case it is inadvisable to give barium in any large amounts, and therefore exploratory operation is warranted, especially in patients in whom there is no evidence of recurring carcinoma in the pelvis.

REPORT OF CASES

A brief review of the case histories will serve to clarify the problems involved:

CASE 1.—A woman, aged 60, when first examined had a carcinoma of the cervix uteri, extending into the broad ligament. Biopsy taken at the time of treatment showed a squamous cell carcinoma, and the patient was treated with radium and roentgen rays in 1927.[4]

Follow-up examinations had shown no evidence of malignant disease, and the patient had been in excellent health for more than two years after the last radium treatment. Then in 1929 unusual constipation set in, which became progressively more severe and at the time of readmission, a few weeks after its onset, she had symptoms and signs of intestinal obstruction. Proctoscopic examination yielded no information, and no blood or mucus was seen in the bowel. Roentgen examination of the colon revealed an obstructing lesion in the sigmoid colon, which was believed to be due to carcinoma. At operation, the lesion had the characteristics of a benign stricture. It was a napkin ring deformity, with a few firm adhesions to the omentum. The adhesions were severed, this portion of the colon was resected, and an end-to-end anastomosis was made. The pathologic diagnosis was chronic inflammation. The patient recovered well from the operation and has reported normal health on numerous occasions during the four and one-half years since the resection was performed.

CASE 2.—A woman, aged 52, had had a pelvic abscess years previously and came to the clinic because of pelvic pain. The cervix uteri was firm, enlarged and nodular, especially on the

4. One tube containing 170 millicuries of radon was inserted into the cavity of the uterus and cervical canal for twelve hours, producing a total irradiation of 2,040 millicurie hours. Three days later, roentgen therapy was started. Two months later a second radium treatment was administered to the cervix, 220 millicuries of radon being used in four tubes against the cervix for ten hours, totaling 2,200 millicurie hours, or a total of approximately 4,240 millicurie hours for the two radium treatments. The actual amount of radiation received represents about 3 per cent less than these figures when calculated according to the time the radon is in place.

right side, and bled easily. There was no thickening of the broad ligaments. Squamous cell carcinoma was revealed by biopsy, and radium and roentgen radiation therapy was administered.[5]

For a year and a half after the radiation therapy, follow-up examinations had shown no evidence of disease and the patient had been in excellent health. Then she began to have severe pains in the bladder, associated with some blood in the urine. These symptoms persisted for three weeks. When the patient returned to the clinic, cystoscopic examination revealed several submucous hemorrhages on the posterior wall of the bladder, in the center of which was a white, irregular area about 2.5 cm. in diameter. Subsequent examinations showed a definite ulcer in the irregular area mentioned. One year following the initial cystoscopic examination, the ulcer had disappeared completely except for a small area of submucous hemorrhage due to separation of the slough a few days previously.

Approximately a year and nine months subsequent to treatment the patient began to have unusual abdominal symptoms, simulating intestinal obstruction. Roentgen examination of the colon showed no obstruction at the time of the onset of these symptoms. No further roentgen studies were made. The initial attack soon subsided, but two months later there was a recurrent attack that was more severe, and an operation was performed. There was an old inflammatory process in the uterine tubes but no evidence of carcinoma could be found. About 25 cm. proximal to the rectum there was a definite, almost complete obstruction of the sigmoid colon. It was not adherent to the pelvis. It seemed as if there were a cicatricial band in the bowel wall, with very little inflammatory reaction outside. Resection was considered, but it was deemed more advisable to make an anastomosis around the obstruction, particularly in view of the fact that the sigmoid colon was unusually long. A side-to-side anastomosis was made. The last follow-up letter from the patient, five years after operation, states that she is in normal health.

CASE 3.—A woman, aged 41, had an enlarged cervix uteri, which was bleeding and ulcerated. The principal involvement was inside the cervix, extending into the uterus and outward through the cervix, lateral to the external os. The biopsy showed squamous cell carcinoma. Radium and roentgen therapy was administered.[6]

The frequent transitory rectal sequelae immediately following these treatments were prolonged in this case. For six months the patient complained of loose stools containing unusual quantities of mucus. It is significant to note here that there was no lesion in the rectum opposite the treated area where one would presume the maximum effect of radium would prevail. The following months there was marked constipation, and, after a period of eleven days without a stool, the patient suffered from considerable abdominal distention and was readmitted to the hospital with a diagnosis of intestinal obstruction. Follow-up examinations had shown no evidence of recurrence of the malignant growth in the cervix or adnexa. Proctoscopic examinations had shown no evidence of disease. Laparotomy was not performed at this time because her symptoms were relieved by the use of enemas and hot fomentations to the abdomen.

She was subsequently readmitted to the hospital at intervals of two and six months. An attempted barium enema was expelled as soon as it had reached the sigmoid colon, apparently indicating obstruction at this level.

Fifteen months after radiation therapy a cecostomy was done and a large tube was inserted for irrigations. Later a colon roentgen examination, during which the barium suspension was injected through the colostomy tube, revealed a definite obstructing lesion in the sigmoid colon. At the subsequent operation, performed recently, the lesion proved to be a benign stricture causing complete obstruction. This portion of the colon was resected and an end-to-end anastomosis was made. The patient's recovery following operation was uneventful and the cecostomy closed itself.

CASE 4.—A woman, aged 50, had a diffuse carcinoma of the cervix uteri involving chiefly the cervical canal (stage 1). Squamous cell carcinoma was revealed by biopsy and the patient received irradiation.[7]

Subsequent examinations revealed satisfactory progress, and the patient was in good health except for an attack of gallstone colic. Approximately three years following irradiation therapy she stated (for the first time) that she had had some blood in the stools off and on during the previous year which she attributed to hemorrhoids. Unusual constipation was also present. Pelvic and proctoscopic examinations showed nothing except the hemorrhoids, and these were treated by the injection method. A colon roentgen examination, however, revealed an annular filling defect in the sigmoid colon, and reexamination one month later revealed the same finding. Bleeding continued at intervals and in one instance there was a cupful of blood clots.

At operation (three and one-half years following radiation therapy) the lesion proved to be a benign stricture. This portion of the colon was resected and an end-to-end anastomosis was made. Death from local peritonitis followed fifteen days after the operation.

CASE 5.—A woman, aged 59, suffered from a rather extensive carcinoma of the cervix uteri, involving chiefly the anterior lip of the cervix and extending into the vaginal wall. The lesion, as determined by biopsy, was a squamous cell carcinoma. The patient was treated with radium[8] but received no roentgen therapy.

The patient made satisfactory progress but complained of slight constipation, which was unusual for her. Seven months following radium irradiation she stated that during the past few weeks the constipation had become more severe and that she had passed darkened blood, blood clots, and mucus by rectum, associated with cramplike abdominal pains. Pelvic examination showed nothing of significance, but roentgen examination of the colon revealed a conical, fixed, concentric narrowing in the midsigmoid area, believed to be due to an irradiation stricture. At operation the stricture was immediately behind the fundus of the uterus. This area appeared anemic as compared with the remainder of the sigmoid colon. A cecostomy was performed and one month later a resection of the lesion and an end-to-end anastomosis were done. The patient was discharged from the hospital one month after operation having normal stools.

CASE 6.—A woman, aged 58, had a carcinoma of the cervix uteri, involving chiefly the posterior lip and the posterior vaginal wall. The pathologic diagnosis was squamous cell carcinoma. Radium therapy was followed by roentgen irradiation.[9]

For five months the patient showed satisfactory progress with complete regression of the lesion but did not return for the usual subsequent examinations. Two months later, in a letter from the patient's husband, who was a physician in a distant town, it was learned that the patient had been confined to bed for a month because of abdominal pain, nausea and pronounced vomiting. He stated that examination revealed no evidence of carcinoma in the cervix or in neighboring structures. Death followed one month later. Autopsy was performed, which revealed an inflammatory stricture of the small intestine, causing a definite obstruction. The exact relation of this area to the uterus was not stated, but examination of this area of the intestine and the uterus, after removal from the abdomen, revealed adhesions on the peritoneal surfaces of both.

5. Two tubes containing 305 millicuries of radon were inserted into the uterus and cervix and two tubes containing 140 millicuries of radon were placed against the cervix for six and a half hours, producing a total irradiation of about 2,759 millicurie hours. Twelve days later, roentgen therapy was started.

6. One tube containing 106 millicuries of radon was placed in the fundus of the uterus, one tube containing 247 millicuries of radon was placed in the cervix, and four tubes containing 142 millicuries were placed against the cervix for eight hours, or a total of approximately 3,960 millicurie hours. One month later roentgen therapy was administered.

7. Two tubes containing 244 millicuries of radon were inserted, one in the cervix and one against the cervix, for ten hours, or a total of approximately 2,440 millicurie hours. One month later, roentgen therapy was administered.

8. One tube containing 266 millicuries of radon was inserted into the cervical canal, and ten radium needles, each containing 10 mg. of radium, were inserted into the carcinomatous mass, approximately 1 cm. apart, and one tube containing 107 millicuries of radon was placed against the anterior lip of the cervix, a total of 373 millicuries of radon and 100 mg. of radium for seven and one-half hours, equivalent to approximately 3,729 mg. hours of radium.

9. One tube containing 118 millicuries of radon was placed in the cervix and another tube containing 177 millicuries of radon was placed against the posterior lip of the cervix, for ten hours, or a total of approximately 2,950 millicurie hours. One and a half months later, roentgen therapy was administered.

From these observations it may be inferred that the stricture of the small intestine involved an area adjoining the uterus, that fibrous adhesions formed between the two, and that the cause of death (since no other cause was considered or found) was severe toxemia, resulting from obstruction of the small intestine.

CASE 7.—A woman, aged 42, admitted to the clinic, June 1, 1926, had had vaginal bleeding for one year. Examination showed extensive papillary carcinoma of the cervix with involvement of the vaginal wall anteriorly and posteriorly, but apparently there was no invasion of the broad ligament. Radium and roentgen irradiation were administered in June 1926.[10]

About six months later the patient reported that for a month she had been having trouble with the rectum. The symptoms included tenesmus, mucus, and blood in the stools. This gradually subsided and when the patient was examined a year after treatment there was a narrowing of the rectum opposite the cervix, but the lumen easily admitted the index finger. The patient had no abdominal complaints.

In October 1930, more than four years after irradiation, the patient complained of recurring attacks of abdominal pain which her physician attributed to gallbladder disease. Roentgenographic examination of the gastro-intestinal tract at that time showed no abnormality except a nonfunctioning gallbladder. The attacks of pain continued at occasional intervals until March 1934, when she suffered a very severe one, at which time she had been ill with abdominal pain, nausea and vomiting for two weeks and had lost a great deal of weight. She reentered the Clinic Hospital, April 7, 1934, nearly eight years after the course of radiation therapy. While at the time of hospitalization there was no evidence of obstruction, it was felt that the last attacks simulated an obstruction, and operation was advised.

Exploratory laparotomy was performed, April 10. In the small intestine, 3 feet from the ileocecal valve there was an almost complete obstruction, with collapse below and considerable dilation above the stricture. About 4 inches above this there was a slight narrowing of the lumen. A resection of about 8 inches of small intestine and an end-to-end anastomosis were done. The patient made an uneventful convalescence and was out of the hospital on the fourteenth day. On the fifteenth postoperative day she experienced a sudden severe pain in the right lower quadrant with some abdominal distention, but there was no elevation in temperature or increased pulse rate. The patient was treated expectantly for five days apparently satisfactorily, when distention recurred and exploration was done. There was some free fluid in the abdomen and some distended coils of intestine, one of which was used for ileostomy. We were dealing with a mesenteric thrombosis. The ileostomy functioned quite satisfactorily but the patient gradually failed and died, about two weeks later, on May 13.

The pathologic report on the lesion removed was as follows: A longitudinal section of the small intestine showed marked thickening and dense fibrosis of the serosal coat in which there were large numbers of greatly thickened arteries, showing varying degrees of obliterative endarteritis, degeneration of the lamina elastica and hyalinization of the intima, with no calcification present. In some areas there was localized, perivascular, inflammatory infiltration, with plasma cells predominating. There was considerable diffuse increase of fibrous tissue in the muscular coat, with fibrosis of the submucosa. The mucosa was somewhat atrophic, contained very little lymphoid tissue and showed mild, diffuse, inflammatory infiltration, with numerous eosinophils and plasma cells present. In one area there was active ulceration, with almost complete destruction of mucosa. The base of the ulcer extended into the muscular coat. There was some fibrinous exudate, in which were many leukocytes together with plasma cells, eosinophils and lymphocytes. Ganglion cells of the submucosa showed extensive degenerative changes in the neighborhood of the ulcer. There was no evidence of neoplasm.

10. The first application of radium consisted of 3,584 mg. hours with tubes and needles in and against the cervix, and roentgen irradiation was given about three weeks later. A second application of radium to the cervix, amounting to 1,300 mg. hours, was administered about a month after the roentgen therapy.

In this case the small intestine, which was only 8 feet (244 cm.) long, accounted for the fact that the patient was losing weight in spite of a good appetite for years. The absorptive mucosa was destroyed and replaced by fibrous tissue.

COMMENT

This group of cases is of particular interest to me because I administered the radium in all cases and have had the surgical management of the resulting complications. The x-ray therapy was administered by Dr. Portmann. Obviously, as is the case in any pathologic process, the factor of particular interest is the causation and possible prevention of the lesion. In this case the radium therapist is likely to blame the x-ray therapist and vice versa, whereas both probably have contributed to the causation of the lesion. It is significant to note that in this series only one patient had any lesion in the rectum opposite the cervix where the maximum intensity of radium radiation would be delivered. With the obstruction of the small intestine in case 7 there was a slight narrowing of the rectum that was readily dilatable. This would seem to justify the statement that the radium dosage used in this series was not excessive.

That roentgen irradiation is not entirely responsible is a justifiable assumption because patient 5 received no x-ray therapy. Furthermore, the lesion in this case was not at the point of maximum intensity but in the sigmoid several inches away. One then must search for causes that contribute to fixation of a certain loop of small or large intestine in the pelvis which is the recipient of the maximum radium and roentgen dosage at that particular point. Previous inflammatory disease of the pelvic organs, either specific or post partum, might tend to fix a loop at a vulnerable point, yet this was not a factor in this group of cases, because in only one was the bowel fixed in the bottom of the pelvis by an apparent previous inflammatory process.

From my observations I would venture the following explanation, which may apply in the majority of cases: The initial insult is delivered by radium. If a loop of small or large intestine remains in the same position in the culdesac during the entire time of radium irradiation, the erythema produced at this point may be sufficient to produce a simple local peritonitis, which would fix the bowel at this point temporarily, and before the exudate is completely absorbed roentgen rays are administered, thus furnishing additional irritation, which is sufficient to cause an ulceration in the mucosa that eventually goes on to stricture formation. As time passes the exudate is absorbed and the bowel becomes free, which is the general finding at operation.

Whether this intestinal lesion is due to one agent or the other or to a combination of the two, ways and means should be devised to prevent it. A change of position of the patient during treatment suggests itself as an aid, but this would not be entirely safe for fear of dislodging the radium tubes and possibly causing damage to the rectum or bladder. However, a Trendelenburg position maintained during treatment may help to keep the intestine out of the pelvis while the latter is being irradiated both by radium and by x-rays. If the theory of some fixation of a loop of intestine is tenable, drugs to stimulate peristalsis may be considered, and it might be advisable to give from 0.5 to 1 cc. of ampoules of pitressin every four hours while the radium is in place or just previous to an x-ray treatment in order to keep the intestine moving and thus to preclude excessive irradiation of any one loop.

In presenting these intestinal complications I do not wish to convey the idea that I disparage the present-day treatment of cancer of the cervix. I believe it is the best that is offered and shall continue to use it. However, on the basis of the experience here reported, I would interject a word of caution regarding the step that is being taken at the present time, the stepping up of the voltage many times more than is in use now, because I think increased voltages carry a definite potential danger of damage to the intestine.

CONCLUSIONS

The recognition of the possibility of benign stricture of the intestine as a complication following radiation therapy, often months or years later, is of utmost importance, for it can very easily be confused with recurrence of a malignant condition. Its detection and surgical treatment may salvage the lives of many patients otherwise regarded as having a hopeless malignant growth.

ABSTRACT OF DISCUSSION

DR. GEORGE GRAY WARD, New York: In a series of 655 cases of cancer of the cervix under my care at the Woman's Hospital, I have observed fourteen cases in which intestinal complications exclusive of the rectum developed. Thirteen of these presented symptoms of partial or complete obstruction, and one involvement of the sigmoid without obstruction. Some were associated with fecal fistulas. In eight of these cases the diagnosis was confirmed by operation or autopsy, and in seven of them metastatic carcinoma of the intestine was found as well as adhesions and inflammatory exudate. Proctitis as evidenced by diarrhea, rectal pain and ulcerations has occurred in about 3 per cent of the cases. There were twenty-two rectovaginal fistulas with three spontaneous and two operative closures, and twenty-one vesicovaginal fistulas with no spontaneous and two operative closures. Eighty-eight per cent of these fistula cases were classed in groups III and IV on their first visit, and five had developed the complication previous to the irradiation. I therefore believe that the extent of the cancer was the causative factor in the majority of these cases rather than the irradiation. Carcinoma of the cervix stump following a supravaginal hysterectomy occurred in forty-seven of 655 cases, or about 7 per cent. In these cases the incidence of fistula was about twice the incidence in old cases. I believe that irradiation under these conditions is much more dangerous, as the bladder lies on top of the cervix at the site of the amputation, where it will come in close contact with the radium tube placed in the cervical canal. Consequently in these cases I have reduced the initial dosage about one half and repeat as necessary. I have encountered ureter and kidney complications from obstruction in eighteen cases as a late result. In many cases I believe it due to contraction of postirradiation connective tissue formation in the broad ligaments, and it is now my practice to pass ureteral catheters as a diagnostic measure in all late cases in which pelvic symptoms develop. Severe deep seated pelvic pain and edema of the extremities may be due to the same cause and not necessarily to metastatic cancer. While in the cases that came to operation or autopsy all but one of the intestinal complications were the result of recurrent carcinoma, nevertheless I appreciate the likelihood of benign postirradiation adhesions being a cause of trouble, as Dr. Jones has found. I am inclined to the belief that prolonged and repeated high voltage roentgen therapy is the most probable cause in the majority of cases of benign stricture of the intestine as the effective range of the radium is so limited, except in those cases in which a loop of intestine is adherent to the posterior surface of the uterus or culdesac. It will take time to determine whether the fractional method of Coutard is the safer technic. In view of Dr. Jones's experience and my own, I wish to advocate that, in all cases in which late postirradiation symptoms of intestinal or ureteral obstruction, severe pain or edema develop, an exploratory laparotomy be done with the object of making an exact diagnosis and relieving the obstruction if due to benign adhesions, enucleation of any involved pelvic glands as suggested recently by Taussig, and a sympathectomy of the presacral nerve for the relief of pain. As many of these patients develop symptoms after the customary five year period of observation, I consider that a ten year period is necessary for the more correct evaluation of radiation therapy.

THE SIGNIFICANCE OF MIXED INFECTIONS IN PNEUMOCOCCIC PNEUMONIA

MAXWELL FINLAND, M.D.
BOSTON

It is my purpose in this communication to call attention to an important group of cases of pneumococcic pneumonia in which multiple bacterial agents are operative. The significance of these mixed infections in altering the course and outcome of the disease and in evaluating the effects of certain specific therapeutic agents will be brought out by citing a few examples.

Numerous instances of cases from which more than one strain or species of bacterium were isolated in the course of the disease may be found in the literature concerning pneumococcic pneumonia. Either most of these instances are recorded as part of intensive bacteriologic investigations of small groups of cases or they are mentioned in the reports of clinical and bacteriologic studies of large numbers of pneumonia cases.[1] In such reports little attention has been given to the significance of each of the various agents and its rôle in the individual case. Isolated examples of carefully studied cases of mixed infections in pneumonia, however, are to be found scattered among reports dealing with the evaluation of specific therapeutic agents [2] or where epidemiologic or immunologic studies have been undertaken simultaneously.[3] Further examples are

---

This study was aided, in part, by a grant given in honor of Francis Weld Peabody by the Ella Sachs Plotz Foundation.

Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School.

1. (*a*) Locke, E. A.; Thomas, H. M. Jr., and O'Hara, D.: Acute Respiratory Infections at the Boston City Hospital, Boston M. & S. J. **183:** 480 (Oct. 21) 1920. (*b*) Lyon, A. B.: Bacteriologic Studies of 165 Cases of Pneumonia and Postpneumonic Empyema in Children, Am. J. Dis. Child. **23:** 72 (Jan.) 1922. (*c*) Cecil, R. L.; Baldwin, H. S., and Larsen, N. P.: Lobar Pneumonia, A Clinical and Bacteriologic Study of 2,000 Typed Cases, Arch. Int. Med. **40:** 253 (Sept.) 1927. (*d*) Trask, J. D.; O'Donovan, C. Jr.; Moore, D. M., and Beebe, A. R.: Studies on Pneumonia in Children: I. Mortality, Blood Cultures and Humoral Antibodies in Pneumococcus Pneumonia, J. Clin. Investigation **8:** 623 (June) 1930. (*e*) Oettinger, I.; Masel, I., and Wiktorow, L.: Zur Klinik und Epidemiologie der croupösen Pneumonie: I. Klinischer Verlauf und pneumokokken Typen, Deutsche Arch. f. klin. Med. **174:** 602, 1933. (*f*) Sutliff, W. D., and Finland, Maxwell: The Significance of the Newly Classified Types of Pneumococci in Disease: Types IV to XX Inclusive, J. A. M. A. **101:** 1289 (Oct. 21) 1933.

2. (*a*) Cole, Rufus: Serum Treatment of Type I Lobar Pneumonia, J. A. M. A. **93:** 741 (Sept. 7) 1929. (*b*) Cecil, R. L., and Plummer, Norman: Pneumococcus Type I Pneumonia: A Study of 1,161 Cases with Especial Reference to Serum Treatment, J. A. M. A. **95:** 1547 (Nov. 22) 1930. (*c*) Quincke, H.: Klinische Erfahrungen bei der Serumbehandlung der Pneumonie, Ergebn. inn. Med. u. Kinderh. **44:** 655, 1932. (*d*) Bullowa, J. G. M.: Studies on the Serum Treatment of Pneumonia, New York State J. Med. **33:** 13 (Jan. 1) 1933. (*e*) Sutliff, W. D., and Finland, Maxwell: Type I Pneumococcic Infections with Especial Reference to Serum Treatment, New England J. Med. **210:** 237 (Feb. 1) 1934. (*f*) Kereszturi, C., and Hauptman, D.: The Serum Treatment of Pneumonia in Children, J. Pediat. **4:** 331 (March) 1934.

3. (*a*) Gundel, M.: Fehlerquellen bei der bakteriologischen Diagnose menschlicher Pneumokokkeninfektionen, Zentralbl. f. Bakt. (Abt. 1) **127:** 467 (Feb. 23) 1933. (*b*) Winkler, A. W., and Finland, Maxwell: Antibody Response to Infections with the Newly Classified Types of Pneumococci (Cooper), J. Clin. Investigation **13:** 109 (Jan.) 1934.

to be found in reports on epidemics of pneumonia, particularly those complicating influenza or measles.[4]

Many methods are employed to determine or to isolate the bacterial incitants in pneumonia. Ordinarily the sputum is utilized for this purpose. The organism, usually a single strain (type) of pneumococcus, is obtained by inoculating the sputum into a mouse and identified from the peritoneal exudate or heart's blood of the animal by its morphologic, cultural and serologic characteristics.[5] When sputum cannot be obtained, suitable culture of material obtained by swabbing the throat may be utilized either directly or after mouse inoculation. Other methods involve tests for soluble and specifically reacting substances in the sputum [6] or urine,[7] or tests for specific serologic reactions of organisms observable directly in sputum.[8] These methods are designed primarily for the isolation and serologic classification of pneumococci, but occasionally they yield the infected pleural cavity in the living patient, or from these and other portions of the body at necropsy. Additional valuable information may be obtained from the reactions of the serum of the convalescent patient with type-specific organsims (agglutinins) or their products (precipitins), or by testing the capacity of such serum to protect animals against multiple lethal doses of virulent specific organisms.[10]

No effort will be made here to evaluate the relative importance of each of these methods. It is merely to be pointed out that the frequency with which multiple bacterial strains are encountered is directly proportional to the diversity of the methods employed. To determine the rôle that each of the agents thus identified plays in the particular disease process of any given individual necessitates the application of a combination of these methods with careful clinical and pathologic observations.

TABLE 1.—*Distribution of Organisms Among 133 Cases of Pneumococcic Pneumonia with Mixed Infections*

Pneumococcus Type	Second Type*					Total Cases with Other Pneumococci†	Other Organisms*									Total Mixed Cases†
	II	III	V	VIII	Others		S. H.	S. Au.	F. B.	T. B.	S. V.	S. H. and S. Au.	S. V. and S. Au.	B. I.	Ty.	
I.....	1	3	1	4 [a]	7 [b,c]	16	10	3	1	4 [i]	2	1	0	3	1 [j]	41
II.....	..	3 [d]	0	0	2 [e]	6	2	1	0	3	1	2	0	1	0	16
III.....	..	..	1	2	6 [f]	15	8	2	3	0	1	2	0	1	0	32
V.....	..	..	..	0	3 [g]	5	2	0	0	0	0	1	0	0	0	8
VIII.....	..	..	..	..	1 [h]	7	3	2	1	0	1	1	1	1	0	17‡
Others.....	..	..	..	..	3	22	8	3	8	2 [k]	3	2	2	1	2	53
Total.....						37§	35 (*a*)	12 (*b*)	14 (*c*)	9	9 (*d*)	9	3	8 (*e*)	3	133§

* Each patient appears once.

† Each number includes cases with preceding pneumococcus types.

§ Excludes duplications.

‡ Excluding one case with gonococci in joint fluid.

Superscripts represent the following additional organisms:
a. S. H., 1 case.
b. XX in addition to XIX, 1 case.
c. XXIV in addition to XXI, 1 case.
d. VIII, 1 case.
e. F. B., 1 case.
f. XVII in addition to X, 1 case.
g. S. H., 1 case.
h. S. V., 1 case.
i. F. B., 1 case.
j. B. I.
k. S. Au., 1 case.

(*a*) includes a and g.
(*b*) includes k.
(*c*) includes i.
(*d*) includes h.
(*e*) Includes j.

Abbreviations:
S. H. = Streptococcus hemolyticus.
S. Au. = Staphylococcus aureus.
F. B. = Friedländer's bacillus.
T. B. = Tubercle bacillus.
S. V. = Streptococcus viridans.
B. I. = Bacillus influenzae.
Ty. = B. typhosus or B. paratyphosus.

other organisms. For determining the presence and relative numbers of other bacteria, direct cultures on suitable mediums are employed.[9] Organisms can also be cultured from the blood, from material obtained by direct puncture of the consolidated lung or from

SOURCE OF MATERIAL

At the Boston City Hospital, between November 1929 and May 1933, approximately 2,000 cases of pneumonia or pneumococcic infections were studied bacteriologically.[11] Among these were 133 cases in which pneumonia was associated with the finding of two or more organisms, at least one of which was a pneumococcus. The organisms were isolated, in almost every instance, during a period of active infection. All pneumococcus strains from these 133 patients were identified as belonging to one or another of the serologic groups I-XXXII (Cooper) with the exception of four that failed to agglutinate in antiserums for types I-XX, no other serums being available at the time when they were isolated. The majority of the other organisms were isolated directly from the blood or from pleural fluid, or they were cultured at necropsy from the heart's blood, from accumulations of pus, or from the consolidated lung. Some instances are included in which the organisms were shown to be predominant in cultures made directly from the sputum or in which they were obtained from the heart's blood of a mouse

4. (*a*) Clendening, Logan: Reinfection with Streptococcus Hemolyticus in Lobar Pneumonia, Measles and Scarlet Fever and Its Prevention, Am. J. M. Sc. **156:** 575 (Oct.) 1918. (*b*) Cole, Rufus, and MacCallum, W. G.: Pneumonia at a Base Hospital, J. A. M. A. **70:** 1146 (April 20) 1918. (*c*) Opie, E. L.; Freeman, A. W.; Blake, F. G.; Small, J. C., and Rivers, T. M.: Pneumonia at Camp Funston, ibid. **72:** 108 (Jan. 11) 1919. (*d*) Nuzum, J. W.; Pilot, Isadore; Stangl, F. H., and Bonar, B. E.: Pandemic Influenza in a Large Civil Hospital, ibid. **71:** 1562 (Nov. 9) 1918. (*e*) Opie, E. L.; Blake, F. G.; Small, J. C., and Rivers, T. M.: Epidemic Respiratory Diseases, St. Louis, C. V. Mosby Company, 1921. (*f*) MacCallum, W. G.: The Pathology of the Pneumonia in the United States Army Camps During the Winter 1917-1918, Monograph 10, Rockefeller Institute for Medical Research, 1919.

5. (*a*) Avery, O. T.; Chickering, H. T.; Cole, Rufus and Dochez, A. R.; Acute Lobar Pneumonia: Prevention and Serum Treatment, Monograph 7, Rockefeller Institute for Medical Research, Oct. 16, 1917. (*b*) Sabin, A. B.: The Microscopic Agglutination Test in Pneumonia, J. Infect Dis. **46:** 469 (June) 1930.

6. Krumwiede, C. Jr., and Noble, W. C.: A Rapid Method for the Production of Precipitin Antigen from Bacteria: An Attempt to Apply It to the Determination of the Type of Pneumococcus in Sputum, J. Immunology **3:** 1 (Jan.) 1918.

7. Dochez, A. R., and Avery, O. T.: The Elaboration of Specific Soluble Substance by Pneumococcus During Growth, J. Exper. Med. **26:** 477 (Oct.) 1917.

8. (*a*) Armstrong, R. R.: Immediate Pneumococcal Typing, Brit. M. J. **1:** 187 (Jan. 30) 1932. (*b*) Sabin, A. B.: Immediate Pneumococcus Typing Directly from the Sputum by the Neufeld Reaction, J. A. M. A. **100:** 1584 (May 20) 1933.

9. (*a*) Griffith, F.: Types of Pneumococci, Report 13 on Public Health and Medical Subjects, 1922. (*b*) Gundel, M.: Die Bakteriologie, Epidemiologie und spezifische Therapie der Pneumokokkeninfektionen des Menschen unter besondere Berücksichtigung der Pneumonie, Ergebn. d. Hyg., Bakt., Immuntätsforsch. u. exper. Therap. **12:** 131, 1931. (*c*) Thomson, D., and Thomson, K.: The Rôle of Pneumococci in the Causation of Colds, Tonsillitis and Bronchitis, Ann. Pickett-Thomson Research Lab. **8:** 130 (Dec.) 1932.

10. (*a*) Dochez, A. R.: The Presence of Protective Substances in Human Serum During Lobar Pneumonia, J. Exper. Med. **16:** 665, 1912. (*b*) Chickering, H. T.: Agglutination Phenomena in Lobar Pneumonia, ibid. **20:** 599, 1914. (*c*) Clough, P. W.: Phagocytosis and Agglutination in the Serum in Acute Lobar Pneumonia; the Specificity of These Reactions and the Regularity of Their Occurrence, Bull. Johns Hopkins Hosp. **30:** 167 (June) 1919. (*d*) Winkler and Finland.[8]

11. This work was carried out with Dr. W. D. Sutliff during 1929-1932 and with Dr. A. W. Winkler in the fourth year.

inoculated with sputum. Tubercle bacilli were demonstrated only in stained preparations of sputum.

The numbers of patients with the various combinations of organisms are shown in table 1. Each patient is listed only once, except in the summary columns, as indicated. A total of thirty-seven patients had more than one pneumococcus type, including four with three distinct serologic groups and four from whom other organisms were isolated in addition to the two types of pneumococci. The remaining ninety-six patients had a pneumococcus and one or more other organisms. There were, in addition, nine patients in whom immunologic reactions of serum obtained during convalescence indicated that the disease was probably caused by a pneumococcus of a different type than the one isolated from the patient. These nine cases were studied with Winkler [3b] in 1932-1933 but they are not included in the table.

CLASSIFICATION OF CASES OF MIXED INFECTION

It is impossible to present here the details of the examinations in all the cases. A review of the data available in these cases has indicated that they may be divided roughly into three groups. In the first group are cases in which only one of the multiple bacterial agents is causing the pulmonary infection, the other probably being incidental. In the second, more than one organism is invading simultaneously, either at the same or at different sites. In the third group, one invasion follows on another and here, again, the same or different sites may be involved. A few examples of cases in each group will suffice to illustrate the significance of the various organisms in relation to the disease.

Mixed Infections, with One Organism Probably Incidental.—Examples of such cases abound in the literature. In some instances one of the organisms can be shown to be a more or less constant inhabitant of the particular individual's nasopharynx.[12] In other instances some of the bacteria may be related to the antecedent infection of the upper respiratory tract.[9c] In the former, type III or some of the types formerly classified as group IV pneumococci are most commonly found; in the latter, influenza bacilli are by far the most frequent, particularly during epidemics. It may be noted that with the further classification of the pneumococci previously included in group IV [13] and with the serologic identification of these organisms when associated with disease,[1f] it has become apparent that some of the newly classified types are regularly associated with disease processes in the lung, while others are more regularly found in normal throats and only rarely cause disease. This new classification has helped considerably in determining the relative significance of multiple bacterial invaders. In patients unable to raise sputum, or with sputum mixed with material from the nose or pharynx, or when ordinary care is not taken to obtain sputum coughed up directly from the lung, organisms not related to the disease are frequently obtained. It is such instances that account for most of the inconsistencies in sputum typings in which one of the group IV pneumococci is obtained from one sputum and a different type obtained from another sample of the same patient's sputum or from a different source.[14]

CASE 1.—G. O., a man, aged 45, had coryza and generalized aches and pains, Jan. 17, 1933. The next day he had chills followed by the chest pain and respiratory distress. He was admitted to the hospital, January 20, and was found to have lobar pneumonia of the left lower lobe. His condition was very toxic and remained so until his death, January 29, the pulmonary process having extended to the upper lobe of the same lung. Sputum, obtained with difficulty in each instance, showed no pneumococci in the specimen of January 20 and type X pneumococci in those of January 21 and 27. The blood cultures made on January 20, were sterile, those on January 25 and 29 showed type I pneumococci. The patient's serum obtained January 20, 24, 25 and 29 failed to agglutinate either type I or type X. There was no autopsy.

CASE 2.—P. C., a woman, aged 26, had on Feb. 23, 1933, a sudden onset with chill, followed by fever, cough and chest pain. She entered the hospital, March 5, at which time she had lobar pneumonia of the left lower lobe. She recovered by crisis, March 7. Purulent sputum inoculated into a mouse, March 6, yielded type III pneumococci in pure culture, and on March 10 type V and no type III organisms were obtained in the same manner. Blood cultures on March 6 and 8 were both sterile. Her serum on March 6, 12, 19 and 26 showed a high titer of agglutinins and protective antibodies against type V but failed to show either antibody against type III.

The evidence in these cases appears to indicate that the type X in case 1 and the type III pneumococci in case 2 were probably not related to the pulmonary lesion.

Concurrent Infections.—Cases in which more than one type of pneumococcus have been shown to cause infection in the lung simultaneously are extremely rare. This may be due to the difficulty of isolating different types from the same culture, except by careful bacteriologic technic. Likewise, cases of lobar pneumonia with proved simultaneous infections and with pneumococci and other organisms are rare. Examples from the present series may be cited:

CASE 3.—K. P., a man, aged 43, had a mild infection of the upper respiratory tract without general symptoms, April 10, 1931. April 12, he had a severe chill followed by right-sided chest pain, fever, and cough productive of frothy red sputum. He entered the hospital, April 18, at which time he had lobar pneumonia involving the entire right lung. He was extremely ill and toxic and remained so until his death, April 24. During the last eighteen hours preceding his death he was given intravenously, 130 cc. of Felton's concentrated antibodies (types I and II) in divided doses. There was no apparent benefit from this treatment. From brown tenacious sputum, obtained April 19, both types I and III pneumococci were isolated, but only the former were recovered from a mouse inoculated with similar sputum on April 22. The blood cultures made, April 23, before serum was given, showed 126 colonies per cubic centimeter of blood, and cultures from picked colonies agglutinated in type I serum only. A second blood culture made two hours after 5 cc. of serum was given showed thirty-six colonies per cubic centimeter of blood. Another 25 cc. of serum was given and two hours later fifty-eight colonies were cultured from 1 cc. of blood. Two additional doses of 30 cc. of antibody were given. From the second and third blood cultures only type I pneumococci could be identified. A culture on the following morning showed approximately 2,700 colonies per cubic centimeter of blood, but from these colonies only type III pneumococci and

12. Cruickshank, R.: Pneumococcal Infections, Lancet **1**: 563 (March 18) 1933.

13. Cooper, Georgia; Rosenstein, Carolyn; Walter, Annabel, and Peizer, Lenore: The Further Separation of Types Among the Pneumococci Hitherto Included in Group IV and the Development of Therapeutic Antisera for These Types, J. Exper. Med. **55**: 531 (April) 1932. (The agglutinating serums for types IV-XXXII were obtained through the kindness of Miss Georgia Cooper and Dr. William H. Park.)

14. (*a*) Birge, E. G., and Havens, L. C.: A Comparison of the Bacteriology of Pneumonia, Ante Mortem and Post Mortem, New York M. J. **109**: 544 (March 29) 1919. (*b*) Sutliff, W. D.: An Investigation of the Reliability of Sputum Typing for Pneumococcus by the Mouse Method, J. Infect. Dis. **42**: 485 (May) 1928. (*c*) Raia, Antoinette; Plummer, Norman, and Shultz, Selma: New Types of Pneumococci in Pneumonias of Children, Am. J. Dis. Child. **42**: 57 (July) 1931.

not type I could be isolated. Immediately after death, which occurred seven hours after the last blood culture was made, thoracentesis revealed no free fluid in the right pleural cavity, but from thick bloody purulent material obtained directly from the lung both type I and type III organisms were isolated.

CASE 4.—H. T., a man, aged 55, was suddenly taken ill, Feb. 14, 1930, with a chill, followed by fever and cough productive of blood tinged sputum. He entered the hospital February 16, with evidence of incipient delirium tremens and signs of lobar pneumonia of the right lower lobe. His condition grew rapidly worse and he died about thirty-six hours after admission. Type VI pneumococci and Friedländer's bacilli were obtained from thick, brown, somewhat foul-smelling sputum raised at the time of admission. Blood cultures made at the same time showed a pure culture of Friedländer's bacilli in broth, but the pour plates remained sterile. At autopsy the right lower lobe was uniformly consolidated and the cut section was gray, mucoid and stringy, and showed many areas of necrosis. The upper and middle lobes showed red hepatization. Cultures from the heart's blood and the right lower lobe showed Friedländer's bacilli only, and these organisms were demonstrated in large numbers in the microscopic sections from this lobe. From the right middle lobe, a pure culture of type VI pneumococci was grown and no Friedländer's bacilli were obtained.

Case 3 probably represents a concurrent infection, apparently of the same lobe, with types I and III pneumococci, both invading the blood stream, the latter type predominating before death, after type I antibodies had been given. This therapeutic procedure may possibly have caused the removal of the homologous type pneumococci from the circulating blood. Case 4 represents a simultaneous infection of two different portions of the lung, each with a different organism.

Consecutive Infections (Superinfections).—From the army camps during the World War there were reported a few instances of definite superinfections in cases of pneumococcic lobar pneumonia that were observed clinically and studied bacteriologically and pathologically.[4] These observations were made during epidemics of measles or influenza. Usually hemolytic streptococci, but occasionally staphylococci or other types of pneumococci, were shown to be the causative agents in these secondary infections. In nonepidemic periods occasional cases of late infections with other organisms complicating the course of pneumococcic lobar pneumonia are mentioned by various writers, usually as incidental observations in discussing failure of specific therapeutic agents.[2] Many such instances have been observed among the cases enumerated in table 1. In a number of these cases immunologic, as well as bacteriologic and postmortem, studies were made. Three cases of this sort are cited:

CASE 5.—M. L., a man, aged 43, had an infection of the upper respiratory tract, Feb. 18, 1930. He still had some residual symptoms on February 24, when he was suddenly taken with a chill followed by marked prostration, chest pain and cough productive of rusty sputum. He entered the hospital, February 26, showing signs of lobar pneumonia in the right lower lobe. During the following four days the pulmonary process extended to the remainder of the right lung. He was toxic, distended, cyanotic and delirious and had signs of meningeal irritation, but lumbar puncture yielded normal spinal fluid on two different occasions. On March 3 and 4 he was considerably improved mentally, and the temperature and pulse rate approached normal. Bilateral septic parotitis developed, March 4, which, under treatment with hot applications, apparently drained adequately into the mouth. The temperature and pulse rate, however, rose steadily during the next three days. The patient again became stuporous and increasingly dyspneic and cyanotic and died, March 8. Type I pneumococci were isolated from thick brown mucoid sputum obtained, February 26, and again from purulent sputum two days later. February 27 and during the succeeding five days, repeated small doses of Felton's serum were given intravenously without apparent benefit. Repeated blood cultures, before and after the serum administration, were sterile. The patient's serum repeatedly showed a large excess of antibodies, even on the day of death. Autopsy revealed complete consolidation of the right lung with many large abscesses containing thick green pus. From these abscesses, from numerous areas in the consolidated lung, and from the parotid abscesses, pure cultures of hemolytic Staphylococcus aureus were obtained and no pneumococci could be found.

CASE 6.—E. H., a woman, aged 59, was suddenly taken ill with chills and vomiting, March 29, 1933. Fever, cough and chest pain soon followed. She was admitted to the hospital, April 1. April 2, she first showed signs of lobar pneumonia in the left lower lobe and, successively, abdominal distention, cyanosis, prostration and auricular fibrillation developed. April 6 the temperature dropped by crisis with striking coincident general improvement. The temperature remained normal for twenty-four hours and then again rose steadily. Dyspnea, cyanosis and prostration recurred, and the patient died, April 9. Type VIII pneumococci were obtained from the sputum, April 2. Blood cultures, April 3 and again April 7, were sterile. The serum on April 7 showed a high titer of agglutinins and mouse protective antibodies for type VIII pneumococci, although these antibodies were entirely absent in the serum of April 3. At autopsy there was a resolving pneumonia and fibrinous pleuritis of the left lower lobe, marked tracheobronchitis and patchy consolidation of the right lower lobe. Hemolytic streptococcus in pure culture was grown from the heart's blood and Staphylococcus aureus and hemolytic streptococcus, but no pneumococcus, were cultured from the lungs.

These two cases probably represent fatal superinfections, in one instance with staphylococci, in the other with streptococci and staphylococci. In the latter case there was definite immunologic evidence of recovery from the type VIII pneumococcus infection. Another instance will be mentioned, in which the superinfection was with another type of pneumococcus, and the patient recovered.

CASE 7.—D. V. F., a woman, aged 39, was admitted to the hospital, Jan. 7, 1933, following attempted suicide by iodine ingestion. The patient gave a confusing history, but she had definite signs of right lower lobar pneumonia at the time of admission to the hospital. She did not appear very ill and had only a low grade fever. The temperature dropped by lysis, January 8, and remained normal from January 9 to 12, when there was a recrudescence of low grade fever with cough productive of thick brown sputum. She was moderately ill until January 19, when there was a critical drop in temperature with coincident improvement. The signs in the right lower lobe persisted, but no new areas of consolidation were detected in the lung. Type III pneumococci were obtained from purulent sputum, January 8. The thick brown sputum obtained on January 12 showed type VII and no type III pneumococci. Blood cultures made on January 12 and 17 showed no growth. Agglutinins and protective antibodies for type III pneumococci were demonstrated in the serum, January 11 and again January 17 and 26. Type VII antibodies could not be detected in the serum on January 11 and 17 but were found in high titer on January 26.

In this case there is evidence of successive infections with two distinct types of pneumococci and immunologic evidence of the successive antigenic activity of each of these respective types.

A summary of some of the important features in the seven cases cited is given in table 2. These cases have been chosen simply to illustrate some of the different ways in which mixed infections may manifest themselves in different patients.

COMMENT

Brief mention may be made of some of the clinical and epidemiologic implications involved in such mixed infections as have been described here. Clinically, each of the three categories mentioned has a special significance. Practically, their importance is concerned largely with the application of specific therapeutic agents. The efficacy of serum treatment in pneumococcic pneumonia has been shown repeatedly to depend strictly on its type specificity. Correct and rapid etiologic diagnosis is essential for its rational use. It becomes apparent at once that when more than one organism is present it is necessary to recognize, if possible, the rôle played by in group IV. This matter, however, has been discussed in the literature dealing with bacteriologic studies in pneumonia and with its specific therapy.

That the presence of multiple organisms invading simultaneously or consecutively may complicate the clinical course and outcome of the disease is obvious. That mixed infections can account for certain failures in cases otherwise adequately treated with specific agents is likewise apparent. In a similar manner, these mixed infections may be responsible for relapses in certain instances, after apparent beneficial effects, and sometimes seemingly striking improvement, have temporarily followed the administration of such specific agents. It

TABLE 2.—*Observations in Seven Cases of Mixed Infection Cited in the Text*

Case Number, Initials, Sex, Age	Onset of Pneumonia	Admission to Hospital	Termination		Bacteriology			Post Mortem	
			Mode	Date	Clinical	Sputum	Blood	Serology	Lung Manifestations	Cultures
1 G. O. ♂ 45	1/18	1/20	Death	1/29	1/17 coryza, lobar pneumonia Ll; extended Lu	1/20 no Pn. 1/21 Pn. X 1/27 Pn. X	1/20 N.G. 1/25 Pn. I 1/20 Pn. I	1/20, 21, 25, 29 no aggl.; Pn. I, and Pn. X		
2 P. C. ♀ 36	2/23	3/ 5	Crisis	3/ 7	Lobar pneum. Ll	3/ 6 Pn. III 3/10 Pn. V	3/6 N.G. 3/8 N.G.	3/8, 12, 19, 26 aggl. and Prot.: absent Pn. III, present Pn. V		
3 K. P. ♂ 43	4/12	4/18	Death	4/24	4/10 coryza, lobar pneum., Ruml. 4/23, 24 serum, 130 cc. in 5 doses	4/19 Pn. I and III 4/22 Pn. I	*4/23 (*a*) 126 Pn. I (*b*) 36 Pn. I (*c*) 58 Pn. I 4/24 2,700 Pn. III	.....	.....	Lung puncture, Rl: Pn. I and III
4 H. T. ♂ 55	2/14	2/16	Death	2/19	Incipient D.T.; lobar pneum., Rl	2/16 Pn. VI and F.B.	2/16 F.B.	.....	Lobar pneum. Rl, brown mucoid; Ruml. red hepat.	HB: N.G. Rl: F.B. (no Pn.) Rm: Pn. VI (no F.B.)
5 M. L. ♂ 43	2/24	2/26	Death	3/ 8	2/18-24 cold and cough; lobar pneum., Ruml. meningismus 2/26-3/3 serum, 18 doses, 370 cc. 3/3 lysis ?, much improved 3/4-8 parotitis, dyspnea, stupor	2/26 Pn. I 2/28 Pn. 1	Daily, all showed N.G.	Aggl. and Prot. Pn. 1 present 2/27 - 3/8	Lobar pneum. Rum. with multiple abscesses containing thick green pus	H.B. : N.G. Parotids Lung abscesses Lungs (many areas) S.Au., no Pn.
6 E. H. ♀ 59	3/29	4/ 1	Crisis Death	4/ 9 4/ 9	Lobar pneum. Ll., Aur. fibril. 4/6 crisis, T. and P. normal 4/7 symptoms recurred	4/2 Pn. VIII	4/3 N.G. 4/7 N.G.	Aggl. and Prot. Pn. VIII absent 4/3, present 4/7	Lobar pneum. Rl. Fibrinous pleuritis Rl Bronchopneumonia, Ll Acute tracheobronchitis	H.B. : S.H. Lungs: S.H. and S.Au.
7 D. V. F. ♀ 39	?	1/ 7	Lysis Crisis	1/ 8 1/19	Lobar pneum., Rl, mild 1/8 lysis 1/9-12 no symptoms 1/12-19 fever, brown sputum	1/ 8 Pn. III 1/12 Pn. VII (no Pn. III)	1/12 N.G. 1/17 N.G.	1/11, 12, 17 Aggl. and Prot. present Pn. III, absent Pn. VII 1/26 Present Pn. III and Pn. VII		

* (*a*) Before serum; (*b*) 2 hours after 5 cc.; (*c*) 2 hours after 30 cc. The numbers indicate number of colonies in pour plates per cubic centimeter of blood.

Abbreviations:

Ll = left lower lobe
Rl = right lower lobe
Ruml = right upper, middle and lower lobes, etc.
D.T. = delirium tremens
Aur. fibril. = auricular fibrillation
Pn. = Pneumococcus (type indicated by Roman numeral)
F.B. = Friedländer's bacillus (B. mucosus-capsulatus)
S.H. = Streptococcus haemolyticus
S.Au. = Staphylococcus aureus
N.G. = no growth
Aggl. = agglutinins
Prot. = mouse protective antibodies
H.B. = heart's blood

each. Likewise, even when only one agent is recovered at first, it is necessary to be aware of the possible errors involved in the methods and of the relative importance of the finding of different organisms or of the various types of pneumococci. Studies [15] of the antibody response of pneumonia patients to infections with different types of pneumococci and comparisons of pneumococcus types found in sputum with those recovered from other sources in the same patient have indicated that certain types, such as types I, II or V, are more apt to be etiologically significant than others, particularly type III and certain of the types formerly classified

15. (*a*) Finland, Maxwell, and Winkler, A. W.: Antibody Response to Infections with Type III and the Related Type VIII Pneumococcus, J. Clin. Investigation **13**: 79 (Jan.) 1934; (*b*) Antibody Response to Infections with Type II and the Related Type V Pneumococcus, ibid. **13**: 97 (Jan.) 1934.

is necessary, therefore, to think of the possibility of mixed infection or superinfection in pneumonia whenever one is concerned with an unusually prolonged acute illness, or when there is a recurrence of acute symptoms after apparent improvement. To be sure, focal purulent complications are the commonest cause of such irregularities in the course of or during convalescence from pneumococcic pneumonia, but the possible presence of other invaders should be kept in mind and will explain some puzzling cases.

Epidemiologically, the cases of mixed infection have a special significance. Repeated investigations have shown that the virulent types of pneumococci and those most frequently associated with primary acute pulmonary infections can be recovered only rarely from nor-

mal mouths. Except in rare instances of chronic carriers, such organisms are found as transient inhabitants of normal throats, usually in persons who have had some contact with cases of the same type. Furthermore, the frequent occurrence of virulent pneumococci associated with colds, particularly when pneumonia is prevalent,[16] and the frequency of antecedent acute infections of the upper respiratory tract in patients with pneumococcic pneumonia indicate that persons with mild infections may acquire virulent pneumococci and become sources of pulmonary infections in themselves and to their contacts. That mixed infections and superinfections arise from without, in a manner similar to the usual primary pneumococcic pneumonias and not simply as autoinfections due to lowered resistance, is clearly shown by the observations made by Opie, Blake, Small and Rivers [4e] in their studies on epidemic respiratory infections at Camp Pike. This was demonstrated for superinfections with pneumococci as well as with virulent hemolytic streptococci. The observations of these investigators and those mentioned in other epidemiologic studies indicate clearly the importance of isolating cases of pneumonia, especially in crowded wards and during unusual prevalence of respiratory disease.

SUMMARY AND CONCLUSIONS

Certain features of a group of 133 cases of pneumonia associated with two or more pneumococcus types or with pneumococci and other organisms have been brought out by referring to illustrative cases.

The cases fall into three groups: (1) cases in which one organism is the effective invader and the other organisms are incidental; (2) cases of concurrent infections, and (3) cases of consecutive infections.

It is important, for purposes of therapy and prognosis, to recognize the presence of mixed infections and to evaluate the relative importance of the various organisms found.

Boston City Hospital.

ABSTRACT OF DISCUSSION

DR. W. D. SUTLIFF, Chicago: The data that Dr. Finland has presented illustrate the usefulness of accurate bacteriologic examinations in pneumonia. As a result of frequent determinations, changes in the clinical course are more easily explained and complications are really traced to their sources. From a clinical point of view, this particular application of bacteriologic study of pneumonia cases should appeal to every one. Other reasons for studying pneumonia bacteriologically have been presented from time to time. The first of these is to choose patients for type-specific antipneumococcus serum therapy. As is well known, a small proportion of the total number of cases of pneumonia are susceptible to specific therapy, and determination of the type of pneumococcus is essential to the discovery of such cases. A second use for bacteriologic information in pneumonia has to do with the question of the precaution that may be necessary to prevent spread of the infection. The degree of isolation of pneumonia patients varies widely. In certain hospitals extreme measures are used to protect pneumonia patients from visitors, from physicians and from other patients. In other hospitals no precautions are used. A recent investigation by Smillie and Leader in Boston, in which two different hospitals were compared, has thrown light on this situation. In one hospital it was difficult to find organisms of the same type as those of the patients among the attendants. The infecting pneumococcus strain was found among attendants about as often as it was in the general population. In another hospital, in which a patient with type I pneumonia had developed an empyema and was being tapped frequently, the spread of organisms was very obvious. The type I pneumococcus was found in the throats of those who were in contact with the patient and in one instance led to a second infection. Thus a more thorough understanding of the circumstances in which one needs to take care to prevent the spread of virulent pneumococci is being evolved by means of careful bacteriologic work. In the classification of pneumonia it has been found that the various organisms differ to a certain extent in the sort of pneumonia they produce. Lobar pneumonia is produced by the more virulent types I and II. Bronchopneumonia is produced by the less virulent pneumococcus, streptococcus, staphylococcus and Friedländer's bacillus. Bronchopneumonia is almost entirely a secondary disease, secondary to debilitating disease, to operation and to previous infections. In the cases that Dr. Finland has reported, it is fairly obvious that lobar pneumonia itself may be classed as one of the precursors of a secondary pneumonia or bronchopneumonia. Such secondary infections can be fully understood clinically only through repeated bacteriologic examinations.

DR. MAXWELL FINLAND, Boston: I thank Dr. Sutliff, who was associated with the largest part of the work here presented, for his discussion. There is one point I might raise in regard to the importance of some of the infections we have observed since these data were accumulated. In the first two weeks of May, of ten consecutive autopsies on pneumococcic lobar pneumonia, six were complicated with hemolytic streptococcus. I was interested to read a recent report to the effect that measles was more frequent this year than it has been for the past thirty years. Hemolytic streptococcic infections complicating lobar pneumonia were very prevalent during the war in the army camps in this country, especially during measles epidemics. Such cases were studied carefully by Cole and McCallum and were reported before this association in 1918 and 1919. There may be some relationship between the high frequency that we have recently observed of hemolytic streptococcic infection following lobar pneumonia and the high prevalence of measles this year throughout the community.

16. Smillie, W. G.: Epidemiology of Lobar Pneumonia: A Study of the Prevalence of Specific Strains of Pneumococci in the Nasopharynx of Immediate Family Contacts, J. A. M. A. **101**: 1281 (Oct. 21) 1933.

ECTOPIC PREGNANCY

OBSERVATIONS IN ONE HUNDRED AND THREE CASES SEEN IN PRIVATE PRACTICE

CHESTER M. ECHOLS, M.D.
MILWAUKEE

In the course of a general surgical practice of thirty years I have operated in 103 cases of ectopic pregnancy,[1] not including a few cases of hematosalpinx of uncertain origin. The operations were done in various Milwaukee hospitals, in smaller outlying hospitals and, a few of the earlier ones, in cases in which it was deemed inadvisable or unsafe to transport the patient, in private homes in the country.

All the patients were white women and all were private patients; that is, none came from clinics or outpatient departments. The predominant age was from 25 to 35 years; the oldest patient was 43.

Four cases were twin pregnancies; all unilateral. There was no case of concurrent intra-uterine and extra-uterine pregnancy. Two were abdominal pregnancies of from six to seven months. Ovarian pregnancy, interstitial pregnancy, and lithopedion formation were not encountered in the series. In no case was there a rupture into the broad ligament.

In one instance the pregnancy was in the rudimentary horn of a bicornate uterus.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. The first thirty-seven of these cases were previously reported: Echols, C. M.: Wisconsin M. J. **15**: 408 (April) 1917.

Three of the women were widows and two had never been married, a fact of slight importance, except as regards the matter of diagnosis.

One patient subsequently became pregnant in the remaining tube. So far as I could learn, this was the only recurrence in the entire series. None of the patients died. With the exception of one woman, in whom a pelvic abscess developed and who was in the hospital five weeks, all were able to leave the hospital in from eleven to fourteen days.

For statistical study, there are available in the literature reports of many series of hundreds of cases of ectopic pregnancy. For completeness of data, the series reported from the Johns Hopkins Hospital embracing all cases at that hospital since 1890 is one of the best.[2] Hawks'[3] compilation of 824 cases from New York is one of the most comprehensive on the subject. It must not be forgotten, however, that these large lists, after all, represent the work of many operators of varying degrees of ability, employing different technics and possibly having conflicting opinions as to when to operate. The results obtained in such a composite collection of operations may well fall short of what could be expected if one surgeon did all the operating. The large personal experience of Polak,[4] Oastler[5] and Hendry,[6] lends great interest to their reports and weight to their opinions, even though their records may be less complete statistically than the larger compilations.

OBSERVATIONS IN 103 CASES

Observations suggested by my own series of 103 cases may be conveniently discussed under the following headings:

Incidence.—The ratio of extra-uterine pregnancies to births can be detemined with reasonable accuracy by dividing the total number of births in a given city or area by the total number of ectopic pregnancies in the same area. Thus, in the year 1933, the total number of births (including stillbirths) in the county of Milwaukee was 13,251. During the same year fifty-nine cases of ectopic pregnancy came to operation in all the hospitals in the county. Two of the fifty-nine cases originated outside of the county, leaving the net total number fifty-seven. The ratio of ectopic pregnancies to births was therefore 1 to 250 in Milwaukee County for the year 1933.

By a similar calculation Schumann[7] found the ratio to be 1 to 267 in Philadelphia for the year 1918. This method of figuring does not take into account the unknown percentage of intra-uterine pregnancies that terminate by abortion and are not reported to the health authorities, nor the ectopic pregnancies in which recovery occurs without operation or diagnosis. Since economic and social conditions affect the abortion rate as well as the birth rate, it is obviously impossible to give any estimate of the percentage of abortions applicable to all times and localities. My impression is that ectopic pregnancies are relatively, if not actually, increasing.

Previous Gonococcic Infection.—Early in the century Schauta, Hahn[8] and other workers in large European clinics assigned to gonorrhea the major rôle in the causation of tubal pregnancy. Writers of textbooks copied their statements and have passed them along down to the present day. My own observations fail to confirm the prominent part assigned to the gonococcus. Only two women in my series gave a clearcut history of gonorrhea, and half a dozen others gave histories suggestive of a former gonococcic infection. This opinion is expressed with the full realization that a woman may have gonorrhea without being aware of it. Engelmann[9] is convinced that the increasing incidence of ectopic pregnancy is due to abortion rather than to gonorrhea, an opinion in which I heartily concur.

Previous Operations and Abortions.—Twenty-eight women of this series had had previous abdominal operations or abortions. These figures are significant when one considers that abortions and abdominal operations may be productive of salpingitis or pelvic adhesions with distortion of the tubes; conditions that predispose to tubal implantation of the ovum.

Age and Social Status.—The age range was from 22 to 43 years, the large majority being between 25 and 35.

As previously stated, five of the women were either unmarried or widows. This fact is mentioned only as a reminder that one must not be unduly influenced by the social status of the patient in seeking a correct diagnosis.

Sterility.—None of my patients had borne more than three children prior to operation, and only four of them had borne that number. Previous total sterility was fairly common, but by far the largest group fell in the category of one-child sterility for a period of years preceding the ectopic pregnancy. In two of the patients tubal pregnancy developed while they were nursing babies aged 5 and 6 months, respectively.

In contrast with my own experience and that of most other observers, it is interesting to note that Polak reported a number of cases of tubal pregnancy among poorer immigrant women of New York and Brooklyn who had borne numerous children in rapid succession, while Hendry reports a remarkable case of tubal pregnancy from the Montreal General Hospital. The patient, aged 35, had gone through fourteen full term pregnancies and had had twelve abortions.

Menstrual Anomalies.—Menstrual anomalies of one kind or another were observed in slightly more than three fourths of the patients. The commonest form was as follows: After a period had been missed for from two days to a week or more, flowing began and continued for weeks, accompanied by occasional lancinating pelvic pains. Many women in this flowing stage have been curetted, usually with a diagnosis of incomplete abortion. In no case in my series did the curettage produce more than a temporary check to the flow.

Uterine bleeding in tubal pregnancies is much less profuse than in real abortions—an important point in differential diagnosis which, it seems to me, has not been sufficiently emphasized.

About 20 per cent of my patients had no warning menorrhagia or uterine bleeding. In this group are included those cases of early tubal perforation and violent intraperitoneal hemorrhage with collapse.

Vaginal bleeding in ectopic pregnancy is usually interpreted as meaning that the embryo is dead and that shedding of the uterine decidua has begun, but in those

2. Wynne, H. M.: Extra-Uterine Pregnancy, Bull. Johns Hopkins Hosp. **30**: 15 (Jan.) 1919.
3. Hawks, E. M.: Surg., Gynec. & Obst. **36**: 232 (Feb.) 1923.
4. Polak, J. O.: Am. J. Obst. **2**: 280 (Sept.) 1921.
5. Oastler, F. R.: Ectopic Pregnancy, Surg. Gynec. & Obst. **24**: 224 (Feb.) 1917.
6. Hendry, W. B.: Clinical Analysis of 152 Cases of Ectopic Gestation, Am. J. Obst. & Gynec. **10**: 386 (Sept.) 1925.
7. Schumann, E. A.: Extra-Uterine Pregnancy, New York, D. Appleton & Company, 1924.
8. Hahn, W.: Zur Frage der Häufigkeit und Aetiologie der Tubargravidität, München. med. Wchnschr. **10**: 248-250, 1903.
9. Engelmann, F.: Med. Klin. **19**: 535 (April 22) 1923; abstr. Am. J. Obst. & Gynec. **8**: 242, 1924.

cases of early, sudden tubal perforation with massive intraperitoneal bleeding, collapse comes before the uterus has had time to begin shedding its decidua.

Tubal Abortion and Tubal Rupture.—Tubal abortion, partial or complete, occurred about four times as often as rupture of the tubal wall. To avoid confusion of terms, I am limiting the expression "ruptured tubal pregnancy" to cases of gross rupture or perforation of the tubal wall. The early destruction of the delicate gestation sac and escape of the ovum (internal tubal rupture of Litzenberg) is really more analogous to abortion, and I prefer to look on it as a variety of tubal abortion. In this restricted sense, rupture occurred in slightly under 20 per cent of the cases in this series. The bleeding in the ruptured cases was generally but not invariably enough to cause immediate pallor and collapse.

Of the unruptured cases diagnosed before operation, three presented no other palpable evidence than a tender fusiform enlargement of the tube the size of a hazelnut close to the cornu. The thin and flaccid abdominal wall made it possible to diagnose tubal pregnancy in these three cases by bimanual palpation. Ordinarily it is not possible to make such an early diagnosis.

Contrary to the commonly accepted teaching, I found that four of the most dangerous cases of hemorrhage were caused by perforation in the outer half of the tube.

Abdominal Pregnancy.—In my series there were two cases of abdominal pregnancy. In each case the fetus had died at about the end of the sixth or the first half of the seventh month. Since both fetuses died from two to four weeks prior to operation, there was no troublesome hemorrhage in dealing with the placenta. These cases are believed to have originated as tubal pregnancies. In one of them a portion of the placenta was still attached to the mucosa of an enormously distended fallopian tube; in the other the placenta was attached to various structures up as high as the liver.

Multiple Pregnancies.—In each of the four cases of twin pregnancy encountered in this series, the twin fetuses were in the same gestation sac. Although the literature abounds in isolated reports of concurrent extra-uterine and intra-uterine pregnancy and of bilateral tubal pregnancy, I have not yet seen any of this type.

Pregnancy in a Rudimentary Horn of a Bicornate Uterus.—The one case of pregnancy in a rudimentary horn of a bicornate uterus occurring in my series behaved in every way like a sudden rupture of a pregnant tube with massive hemorrhage. When brought to the hospital in shock and collapse, the patient gave a history of having one healthy child, aged 3½ years. The delivery had been normal. She had missed the last three menstrual periods. Immediate laparotomy revealed an enormous amount of fresh blood and a fetus of about fourteen weeks, attached to a cord lying among the intestines. The frayed-out placenta indicated that the pregnant rudimentary horn broke with explosive violence. The operation consisted of amputating the rudimentary horn with the attached ovary and tube.

Examination of the specimen disclosed two interesting facts: (1) There was no corpus luteum in the ovary removed, and (2) the rudimentary horn had no canal communicating with the cervical canal. This meant, of course, that a sperm had traveled up through the tube on the opposite side and had fertilized an ovum from the ovary of that side, and that the fertilized ovum had then been picked up by the tube attached to the rudimentary horn. This was, therefore, a clearly demonstrable case of external migration of the fertilized ovum, and not one of external migration of spermatozoa.

Recurrence.—Five years after the removal of a pregnant right tube, one woman in this series came back with a pregnant left tube. It is rather surprising that this is the only instance of recurrence that I have observed in the 103 cases. Some writers have found recurrences in as high as from 4 to 10 per cent of their cases. Of course, it might be argued that there may have been subsequent ectopic pregnancies in the patients of this series who were operated on by other surgeons. It seems more likely, however, that I would have heard about such operations through my colleagues, if not from the patients themselves.

Diagnostic Errors.—Correct diagnosis before operation was made in between 70 and 80 per cent of the cases. A more complete and detailed history in all cases would have raised the percentage of correct diagnoses. On three occasions, to my knowledge, I have examined women with extra-uterine pregnancy without recognizing the condition. Later, when the symptoms were more pronounced, the patients were operated on by other surgeons. Errors of this type must be included if a close check is to be kept on all mistakes. Five times I have operated for ectopic pregnancy without finding it. No particular harm was done by this sort of error, for in each case some other condition was found that called for surgery.

One of my failures to recognize a tubal pregnancy was in the case of a woman, aged 42, who, ten months previously, had received an intra-uterine radium treatment for menorrhagia due to fibrosis in an enlarged uterus. The purpose of the radium treatment was to shrink the enlarged uterus and bring about the menopause. The treatment apparently was a complete success, for when I saw her ten months later because of a slight pain in the right lower quadrant, she had not flowed at all since the radium treatment. I thought the slight pain was probably appendical. Three weeks later another surgeon removed a pregnant right tube.

Two other failures to diagnose tubal pregnancy before operation occurred in women who were nursing babies of 5 and 6 months and who, therefore, had not menstruated for the preceding fourteen or fifteen months.

A surprisingly large number of my earlier patients had been diagnosed as bleeding from incomplete abortion, and curettage had been done with the idea of emptying the uterus of retained secundines. Curettage invariably failed to cure such uterine bleeding. A careful history and physical examination will nearly always differentiate between extra-uterine pregnancy and ordinary abortion without resort to curettage. The greater severity and shorter duration of hemorrhage in abortion is one important differential point.

Hormone tests, such as the Aschheim-Zondek, have been disappointing. The extra-uterine embryo is usually, if not always, dead before vaginal bleeding begins. Since hormone tests become negative soon after the death of the embryo, they are apt to fail when they are needed most.

Failure to think of the possibility of ectopic pregnancy in a given case is one of the commonest causes of failure to recognize it.

Finally, there is no constant unfailing sign or symptom of ectopic pregnancy. Its pathology is too varied

to be reduced to a formula. For this reason it is doubtful whether the time will ever come when more than three fourths of all cases will be correctly diagnosed before operation.

Operative Measures. — Lawson Tate, just fifty-one years ago, was the first man to operate deliberately for ruptured ectopic pregnancy.

Among surgeons of today there is no serious difference in the procedure, except in dealing with the condition that some writers are fond of calling "tragic cases" of rupture, rapid hemorrhage and collapse. When in 1907 the late Hunter Robb advocated waiting for such patients to recuperate from the shock of hemorrhage before operating, he precipitated a controversy that has not completely subsided to this day. He rightly argued that death rarely comes from the first hemorrhage following rupture, and counseled waiting for improvement before operating.

Convincing evidence, however, has accumulated that patients with ruptured tubes can, and do, bleed to death. In the desperate cases, which constituted about 15 per cent of my own series, I made it a rule to operate quickly if there was a breath of life in the patient, and to stimulate during and after operation. It is worse than a waste of time to mop the abdominal cavity dry. I removed only the large masses of clot and then the abdomen was filled with salt solution while the peritoneum was being closed.

Drainage was employed only three times in this series. Colpotomy was done only twice, and then only because of a wrong diagnosis. Puncture of the vaginal vault is neither a desirable nor an accurate method of diagnosing ectopic pregnancy.

Mortality.—The fact that all of the 103 women of this series, including an average proportion of "tragic" cases, recovered completely following their operations is eloquent testimony to the recuperative power of this class of patients. These women are usually in the prime of life and are among the most promising risks in the whole field of major surgery.

231 West Wisconsin Avenue.

ABSTRACT OF DISCUSSION

DR. JOSEPH D. HEIMAN, Cincinnati: The ratio of ectopic pregnancies to the total number of births is interesting. Another way of determining the incidence is in relation to the total number of gynecologic cases. With an average turnover of about 1,300 a year in the Cincinnati General Hospital there are approximately fifteen ectopic pregnancies, or a ratio of 1 to 78. I am glad that Dr. Echols disagrees with the prescribed teachings of gonorrhea as a causative factor. There was no history or evidence of this infection in a series of thirty cases that I reviewed in 1932 and 1933, whereas a number of these patients had abortions previous to their ectopic pregnancies. The chief symptoms are still menstrual anomalies of one kind or another and one-child sterility. I differ slightly in my method of treatment in that I try partially to overcome the shock before operation, by means of blood transfusion. I have never failed to produce some degree of improvement. During the operation, if time will permit, I suck out as much fluid blood as possible, filter it and introduce it into the patient's vein. As much as 1,200 cc. has been given in this way. A very important point brought out is that vaginal bleeding in tubal pregnancy is much less profuse and of longer standing than in real abortions. In sudden rupture, vaginal bleeding may be absent. Tubal abortion is a much less serious accident than tubal rupture. If one could be sure of the type with which one is dealing, one could allow the condition to improve before doing an immediate operation. These are the cases that present recurrent attacks of pain, bleeding and then recovery. It is when the clot can no longer hold the pregnancy in the tube that profuse fatal bleeding may occur. In the rupture of the tubal wall, however, there is no temporary stoppage of bleeding. Dr. Echols' single recurrence reminds me of a case in which a right tubal pregnancy occurred two years after a previous tubal pregnancy on the same side. The first surgeon had not completely removed the tube at the time. So far as I know this is the only case in which two pregnancies have occurred in the same tube.

DR. JOSEPH B. DE LEE, Chicago: I should like to know what your treatment is of ectopic gestation that has ruptured and the patient when you first see her is in a moderate or even a considerable degree of shock. I am therefore going to make a proposition and ask you to vote on it. How many will operate at once in a diagnosed ectopic pregnancy in which the patient enters the hospital in shock?

DR. EMIL NOVAK, Baltimore: You ought to qualify that—with transfusion at the time.

DR. DE LEE: Well, I will put it this way: If the woman is in shock, the first thing one does is to give her blood and salt solution and sugar, but one makes immediate preparations for operation and operates. How many do that and how many prefer to follow the recommendation of Hunter Robb many years ago, of waiting for the shock to disappear before operation? Those who are in favor of immediate operation please say "aye." How many prefer to wait until the shock has gone?

DR. NOVAK: Hunter Robb, as I understand it, advocated in a very large percentage of cases conservatism in the management of these cases.

DR. DE LEE: I think the issue is clearly defined and I am not criticizing Hunter Robb. How many prefer to wait until the shock is over or, to put it even more drastically, how many wait in any case of ectopic pregnancy whether the symptoms are mild or severe? Say "aye." [All said aye.] I feel that, when a diagnosis of ectopic pregnancy is made, immediate operation should be performed and one should not wait until the next morning either, even if the symptoms are mild. I am glad to see that the majority agree with me.

DR. W. H. WEIR, Cleveland: As an assistant to Dr. Hunter Robb, I was privileged to help in his research to which Dr. Echols referred. Dr. Robb found that it was practically impossible to kill a pregnant bitch by dividing and leaving untied the uterine arteries, even if the abdomen was reopened an hour or so later to start the bleeding anew. One cannot argue that the same could be done in a human being, but it does show the ability of the organism to overcome a tremendous loss of blood. There is no question that most of the fatalities in ectopic cases in those days were due to the patients' being operated on in severe shock. Transfusion was seldom employed, as the technic was far more complicated and difficult than it is now. Blood grouping was unknown and bad results occasionally happened. The ease and rapidity with which blood transfusion can be performed today has decided the whole problem of that time as to whether to operate immediately, before the patient might bleed to death, or to wait in the hope that the hemorrhage might cease and the patient recover from the severe shock, which she will do almost always without blood transfusion. There is no condition in gynecology which so often leads to mistakes in diagnosis as ruptured ectopic pregnancy. I have made many errors. Pus tubes may be far more suggestive of ruptured ectopic and vice versa, and all the clinical signs and the laboratory aids to diagnosis, such as the leukocyte count and the sedimentation test, may indicate the wrong diagnosis. In one unusual case a thin-walled ovarian cyst, presumably a follicular retention cyst, was felt to rupture during examination, a relatively common experience and unattended by any ill results as a rule. The history in this case had been a little suggestive of ectopic pregnancy, so the patient, who was in the hospital, was carefully watched. No trouble occurred until about fourteen hours later, when she quickly went into profound shock. Transfusion was done and the patient immediately operated on for a supposed ruptured ectopic pregnancy. No blood was found in the abdominal cavity, only a quantity of chocolate-colored fluid from a ruptured endometrial cyst. The gradual absorption of this fluid apparently produced a toxemia with the clinical picture of severe shock.

OXYGEN IN THE TREATMENT OF ACUTE CORONARY OCCLUSION

ALVAN L. BARACH, M.D.
AND
ROBERT L. LEVY, M.D.
NEW YORK

In a previous communication [1] we reported that the administration of 50 per cent oxygen to certain patients suffering from coronary thrombosis sustained cardiorespiratory function during a critical period and made possible their ultimate recovery. Because the importance of this measure has not been recognized in a number of recent articles and textbooks, further evidence in support of our original conclusions is presented and the technic of oxygen therapy outlined in detail.

When a coronary branch is suddenly occluded, the area of myocardium normally supplied by this vessel is abruptly deprived of blood. The function of the affected muscle is impaired because of lack of nutrition, especially through want of the oxygen necessary for normal contraction. If a sufficiently large area is involved, the heart is no longer able to empty itself of the customary volume of blood and the pressure in the auricles and veins increases. Passive congestion is thus produced in the lungs and viscera. Pulmonary function with respect to the absorption of oxygen becomes impaired, since oxygen does not diffuse readily through edematous alveolar walls. The volume of air in the lungs is diminished by the increased amount of blood in the congested pulmonary vessels. Loss of pulmonary distensibility prevents adequate ventilation. The blood passing through the lungs is incompletely aerated and the heart is consequently provided with arterial blood deficient in oxygen. Its activity is thus further handicapped.

As the result of this sequence of events, a vicious circle is initiated which induces progressive oxygen starvation of the heart muscle. That the myocardium is particularly sensitive to this condition was shown in an experimental study by Katz and Long.[2] They demonstrated that increasing oxygen want caused an exhaustion of the heart muscle when the lactic acid content was elevated to two and a half times the normal level, whereas skeletal muscle was able to contract until the lactic acid reached four and a half times the resting content.

In two cases of heart failure, Beddard and Pembrey [3] in 1908 observed that the inhalation of oxygen caused a marked decrease in pulmonary ventilation. A similar effect, with subjective improvement, was noted by Campbell and Poulton.[4] In 1921, Barach and Woodwell [5] showed that the arterial and venous oxygen saturations of patients with congestive failure could generally be substantially elevated by the inhalation of from 40 to 60 per cent oxygen. In 1929, Barach, Richards, Milhorat and Levy [6] reported that certain patients with advanced cardiac insufficiency who had failed to respond to other forms of treatment were restored to compensation by continuous oxygen therapy, given for from two to six weeks. In the cases that improved, the noteworthy features were relief of dyspnea, occurrence of diuresis and marked elevation of the carbon dioxide content of the arterial blood. These results were in part confirmed by Hamburger, Katz, Cohn and Rubinfeld.[7] In studying the oxygen consumption of patients with cardiac failure, Uhlenbruck [8] noted a temporary increase in oxygen absorption when oxygen was inhaled instead of air. This observation was repeated by Jansen, Knipping and Stromberger,[9] who termed the increment of absorbed oxygen the "oxygen deficit." The patient with cardiac insufficiency was thus shown to be continuously short of oxygen.

That the pain of acute coronary occlusion might be relieved by inhaling oxygen in high concentration was first pointed out by Rizer.[10] Lewis [11] showed that pain results when the blood supply to a working muscle is inadequate and inferred that attacks of anginal pain are brought about by relative ischemia of the heart muscle. Kissin,[12] going a step further, demonstrated that oxygen want is the chief contributing cause of pain in an exercised muscle. With Rothschild, Kissin was able to induce attacks of anginal pain by lowering the concentration of oxygen in the air breathed by patients with coronary sclerosis.[13] Conversely, Barach [14] reported that individuals who suffered from repeated attacks of cardiac pain obtained definite relief while in residence in an oxygen chamber.

The facts just enumerated establish three points: 1. Anoxemia of the heart muscle occurs after sudden occlusion of a sizable coronary branch. 2. Oxygen want induces impairment of cardiac and respiratory activity. 3. The inhalation of oxygen, in high concentration, increases the oxygen content of the arterial blood and results in improvement in the functional capacity of the heart.

The beneficial effects of oxygen treatment in cases of coronary thrombosis have been confirmed in clinical reports by Ulrich,[15] Kilgore [16] and Bickel.[17] A dramatic instance was recorded by Burgess, Briggs and Burgess:[18]

A woman, aged 66, became pulseless and cyanotic following an acute attack. The blood pressure was not obtainable. Characteristic electrocardiographic changes were found. Oxygen was given by the "open box" method at the rate of 7 liters

From the Department of Medicine, College of Physicians and Surgeons of Columbia University, and the Presbyterian Hospital.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Levy, R. L., and Barach, A. L.: The Therapeutic Use of Oxygen in Coronary Thrombosis, J. A. M. A. **94:** 1363 (May 3) 1930.

2. Katz, L. N., and Long, C. H.: Lactic Acid in Mammalian Cardiac Muscle: Part I. The Stimulation Maximum, Proc. Roy. Soc., London **99:** 8 (Dec. 1) 1925.

3. Beddard, A. P., and Pembrey, M. S.: Observations on Pulmonary Ventilation in Disease, Brit. M. J. **2:** 580 (Aug. 29) 1908.

4. Campbell, J. M. H., and Poulton, E. P.: Effect on Breathless Subjects of Residence in an Oxygen Chamber, Quart. J. Med. **20:** 141 (Jan.) 1927.

5. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy with Determination of Blood Gases: I. In Cardiac Insufficiency and Related Conditions, Arch. Int. Med. **28:** 367 (Oct.) 1921.

6. Barach, A. L.; Richards, D. W.; Milhorat, A. T., and Levy, R. L.: Effects of Oxygen Therapy on Patients with Congestive Heart Failure, Proc. Soc. Exper. Biol. & Med. **27:** 308 (Jan.) 1930. Barach, A. L., and Richards, D. W.: Effects of Treatment with Oxygen in Cardiac Failure, Arch. Int. Med. **48:** 325 (Aug.) 1931. Richards, D. W., and Barach, A. L.: Quart. J. Med., to be published.

7. Hamburger, W. W.; Katz, L. A.; Cohn, L. N., and Rubinfeld, S. H.: Observations on Effects of Oxygen Therapy; Clinical Observations in Heart Disease, J. A. M. A. **98:** 779 (May 21) 1932.

8. Uhlenbruck, P.: Ueber die Wirksamkeit der Sauerstoffatmung, Ztschr. f. d. ges. exper. Med. **74:** 1 (June 17) 1930.

9. Jansen, K.; Knipping, H. W., and Stromberger, K.: Klinische Untersuchungen über Atmung und Blutgase, Beitr. z. klin. d. Tuberk. **80:** 304, 1932.

10. Rizer, R. L.: Oxygen in the Treatment of Coronary Occlusion; Preliminary Report, Minnesota Med. **12:** 506 (Aug.) 1929.

11. Lewis, Thomas: Pain in Muscular Ischemia: Its Relation to Anginal Pain, Arch. Int. Med. **49:** 713 (May) 1932.

12. Kissin, Milton: Relation of Induced Anoxemia to the Pain of Muscular Exercise, Proc. Soc. Exper. Biol. & Med. **30:** 114 (Nov.) 1932.

13. Rothschild, M. A., and Kissin, Milton: Anginal Syndrome Induced by Gradual General Anoxemia, Proc. Soc. Exper. Biol. & Med. **29:** 577 (Feb.) 1932.

14. Barach, A. L.: The Therapeutic Use of Oxygen in Heart Disease, Ann. Int. Med. **5:** 428 (Oct.) 1931.

15. Ulrich, H. L.: Angina Pectoris: Medical Treatment, Minnesota Med. **15:** 513 (Aug.) 1932.

16. Kilgore, E. S.: The Treatment of Acute Coronary Occlusion, J. A. M. A. **100:** 315 (Feb. 4) 1933.

17. Bickel, G.: Le traitement de l'infarctus du myocarde, Paris méd. **23:** 388 (May 6) 1933.

18. Burgess, A. M.; Briggs, A. S., and Burgess, A. M. Jr.: Oxygen Therapy by the Open Box Method, New England J. Med. **210:** 254 (Feb. 1) 1934.

a minute. At the end of three hours, the cyanosis had disappeared and the pulse was of good quality. The patient ultimately recovered.

The group of sixteen new cases that we have studied is not sufficiently large for statistical presentation. The results, however, have confirmed our earlier impressions and, in the cases which have responded favorably, may be summarized as follows:

1. Subjective improvement occurred in from one to three hours after the administration of oxygen was begun. The relief of pain was striking. Respiration became less labored and slower. The patient was no longer restless. It was therefore possible to curtail materially or even stop entirely the use of morphine and other sedatives.

2. Cyanosis was diminished or abolished.

3. Cheyne-Stokes breathing, if present, gradually disappeared.

4. The temperature, in cases in which it was elevated, tended to fall.

5. The heart rate became slower. The heart sounds grew stronger and the volume of the pulse improved. The signs of congestion in the lungs became less marked. As the state of the circulation improved, the arterial blood pressure rose and the venous pressure fell.

6. Interruption of oxygen therapy before adequate readjustment of circulatory conditions had taken place resulted in recurrence of the symptoms and signs just cited.

It is not to be expected that all these beneficial effects will take place in every case. When one of the larger vessels is occluded, particularly if the heart muscle is already seriously damaged, recovery may not be possible. It is frequently difficult to foretell the outcome. We have been surprised to observe improvement in cases that seemed to offer but little hope of a favorable course. In other patients, a sudden turn for the worse has resulted in death at a time when the prognosis seemed good. The use of oxygen does not appear to prevent extension or recurrence of the thrombotic process, but it does lighten the burden thrown on a myocardium that has received a sudden, damaging shock. Thus, during the period of greatest stress, it affords an added margin of safety, which may be sufficient to enable the heart to recover.

During the acute phase we have come to depend less and less on drugs, with the exception of morphine. The value of digitalis or caffeine at this time is debatable. A paroxysm of ventricular tachycardia can usually be terminated by quinidine. A discussion of other details of management may be found in current monographs.

METHOD OF OXYGEN TREATMENT

Not every case of acute coronary occlusion requires oxygen therapy. Patients who suffer from the milder forms [19] may experience only brief discomfort and may make a rapid symptomatic recovery. On the other hand, the potential gravity of the condition and the abruptness with which circulatory failure may develop make it desirable to provide for the availability of oxygen on short notice, as soon as the diagnosis is made. It is well to pursue a policy of watchful waiting and to begin oxygen when evidences of impairment in cardiorespiratory function first become apparent. The presence of cyanosis is the classic index of oxygen want, but it cannot be trusted too far. An ashen gray color or pallor may be observed even in the presence of relatively severe anoxemia, since capillary constriction, due to shock, may prevent sufficient blood from reaching the skin to transmit the bluish tint. The clinical picture serves as the best guide. Rapid heart rate, feeble heart sounds, often with gallop rhythm, labored breathing, persistently low blood pressure and moist râles at the bases of the lungs are signals of distress from a failing circulation which needs support.

The most effective way of giving oxygen is by means of a large, well ventilated tent.[20] The temperature inside the tent should generally be kept between 60 and 65 F., since at these levels most patients experience the greatest comfort. A concentration of 50 per cent oxygen is usually employed; 60 per cent can be given indefinitely without harm. In severe cases with rapidly progressive failure, 70 per cent concentration may be used for several hours at a time. Mixtures containing over 70 per cent are not recommended except for brief periods, for in animals such high concentrations have been found to be irritating to the lungs when administered continuously for a number of days. The aim of therapy is to maintain a degree of concentration sufficient to overcome the existing anoxemia.

On the average, it is desirable to keep the patient in the tent for about five days. This period may be shortened or extended, depending on the condition. It must be borne in mind, however, that the satisfactory and comfortable appearance of the patient may be due to the sustaining effect of inhaling a mixture rich in oxygen. For this reason, it is advisable to lower the oxygen concentration gradually from 50 to 35 per cent over a twenty-four hour period, then to 21 per cent during the following twelve to twenty-four hours. If it is desired to stop oxygen without previous lowering of the concentration, the patient should be carefully observed after removal of the tent, for signs of dyspnea and cyanosis. The pulse and respiratory rate should be counted at fifteen minute intervals for three hours. If the heart rate does not increase more than ten beats a minute above its rate in the tent, and the respiratory rate does not rise more than six a minute, oxygen may be discontinued. If such an acceleration in either cardiac or respiratory rate should occur, it is safer to continue treatment for another day and then stop the oxygen, the same observations being made.

An oxygen chamber is, of course, a more comfortable method of therapy, but it is available only in a hospital. A portable chamber,[21] made of rubberized fabric, can be brought to the home and affords a sense of greater spaciousness. It is more troublesome to set up and more costly to maintain.

If a tent or chamber is not available, the nasal catheter may be employed as a measure of moderate effectiveness. The oxygen should come from a high-pressure tank and be given through a calibrated gage at the rate of from 5 to 6 liters a minute. This provides about 38 per cent oxygen, if the patient breathes through the nose. By placing the catheter beyond the posterior pharynx, so that the tip rests just above the glottis, Wineland and Waters [22] have found that a flow of from 7 to 8 liters per minute is capable of maintaining a concentration of 50 per cent. This is the rate of flow ordinarily employed in supplying a

19. Levy, R. L.: Mild Forms of Coronary Thrombosis, Arch. Int. Med. **47**: 1 (Jan.) 1931.

20. Barach, A. L.: Importance of Ventilation in Oxygen Tent and Oxygen Chamber Therapy, with Description of an Improved Oxygen Tent, New York State J. Med. **31**: 1263 (Oct. 15) 1931.

21. Barach, A. L.: An Oxygen Chamber Simplified in Design and Operation, J. A. M. A. **97**: 390 (Aug. 8) 1931.

22. Wineland, A. J., and Waters, R. M.: Oxygen Therapy: Insufflation into Oral Pharynx, Arch. Surg. **22**: 67 (Jan.) 1931.

tent. A few patients that we have treated by this method complained of irritation of the throat, and a hacking cough necessitated withdrawal of the tube. The method is undoubtedly of value, but the throat must be sprayed frequently with liquid petrolatum.

SUMMARY

Anoxemia of the heart muscle occurs after sudden occlusion of a sizable coronary branch. General oxygen want results and induces impairment of cardiorespiratory activity. The inhalation of oxygen, in high concentration, increases the oxygen content of the arterial blood and results in improvement in the function of the heart.

On the basis of these facts, oxygen has been given, usually in a concentration of 50 per cent, to a series of patients suffering from the effects of acute coronary occlusion. In a considerable number, both in our own experience and in that of others, great symptomatic relief has been afforded. We feel justified in concluding this report, as we did the paper published in 1930, with these words: "Employment of oxygen therapy may aid in maintaining an adequate circulation until the heart has had an opportunity to recover from its acute functional disturbance. Obviously, the cardiac injury may be so severe that recovery is impossible. But in certain instances, effective use of oxygen may be responsible for the saving of life."

117 East Seventy-Seventh Street—730 Park Avenue.

ABSTRACT OF DISCUSSION

DR. WALTER M. BOOTHBY, Rochester, Minn.: Whenever a patient has anoxemia of the acute type of any of the tissues of the body due to interference with the oxygen diffusion through the lungs, oxygen therapy is always indicated. Pulmonary edema of any type that is acute is always relieved by the use of oxygen. In the cases of chronic cyanosis and chronic conditions there is comparatively little hope of obtaining any material improvement from temporary use of oxygen. The authors have been interested in keeping some cases under oxygen therapy of various types for months at a time. That is an interesting research problem. I do not believe that hospital facilities for oxygen therapy at present permit of a prolonged monthly use of oxygen in a large series of cases. It ties up too much equipment and the results are, on the whole, too doubtful. But in any form of acute anoxemia, whether cardiac or pulmonary in origin, patients will be helped and benefited and a certain percentage of lives will be saved by the conservative and proper use of oxygen therapy.

DR. A. CARLTON ERNSTENE, Cleveland: The primary aim in the treatment of patients with coronary occlusion is the relief of pain. It is difficult to evaluate the effect of oxygen in shortening the duration of pain, but instances have been recorded that are striking. Kilgore, for instance, reported a case in which the patient was relieved of pain during the time he was kept in an oxygen tent, but the pain promptly returned when oxygen therapy was stopped temporarily. I believe therefore that, whenever the pain of acute coronary occlusion is not relieved with reasonable promptness by large and repeated doses of morphine, one should proceed to the use of oxygen. Aside from the use of morphine, drugs are of little value. A few instances have been reported of prompt cessation of pain following the intravenous administration of theophylline-ethylenediamine. This drug in my own experience, however, has been quite disappointing. The second aim in the treatment of coronary occlusion is support of the circulation. In a majority of the cases, adequate rest in bed is all that is required after the pain has been relieved. In cases, however, in which symptoms and signs of congestive myocardial failure develop or in which persistent auricular fibrillation occurs, the administration of digitalis is indicated. If digitalis does not effect relief of the symptoms and signs of congestive failure, or if acute pulmonary edema develops, one should be prepared to administer oxygen. I believe that the use of oxygen in these particular situations will frequently give gratifying results.

DR. FORD HICK, Chicago: Dr. Herrick made well known the clinical picture of coronary thrombosis about twenty-two years ago. I want to attest further the effectiveness of the therapy that the authors have outlined. Physicians who have watched these patients die about six hours after the attack feel keenly that anything which will tide them over that period is well worth while. Why the textbooks should not recognize its importance and effectiveness is hard to understand. Surely it must be because the men who write textbooks on therapeutics rarely see the cases in the clinical wards. The effectiveness of oxygen in certain of these cases is little short of miraculous. I would like to attest again the effectiveness of the use of the nasal catheter. As a matter of clinical application, I found that the inspired air contains about 42 per cent of oxygen when administered with the tip of the nasal catheter resting on the top of the soft palate, as Waters recommends.

DR. LOUIS F. BISHOP JR., New York: One important point is the fact that oxygen therapy will often relieve pain when morphine will not. All physicians who have had the experience of not being able to relieve the pain in a case of acute coronary thrombosis realize the value of having some other adjunct. At Bellevue Hospital we have used oxygen therapy in coronary thrombosis in a number of cases. Unfortunately, we do not have the elaborate apparatus the authors have described, such as oxygen chambers and tents, and have not been able to keep the patients in over long periods of time. We have, however, used the nasal catheter as Dr. Ernstene has also reiterated, often with pleasing results. For that reason I hope that more physicians will use oxygen in coronary thrombosis, particularly because it will make it unnecessary to give huge doses of morphine to control the pain.

DR. MARTIN FRIEDRICH, Brooklyn: I would emphasize the use of extremely high oxygen concentrations in anoxemia, whether of cardiac or of pulmonary origin. In reading and hearing the report of the authors, one notes that they always emphasize that one should never exceed 70 per cent, because animals kept in small oxygen chambers succumb to a serous pneumonia after about the seventh or eighth day. Experiments have been done by R. R. Sayers in which animals have been kept at 100 per cent concentrations, or as close to it as is physically possible, for various periods of time. One group of animals was exposed for sixteen hours daily for fifty consecutive days without apparent harmful effects. I would take this opportunity to report a case of a woman who had just been delivered and who suddenly developed a pulmonary embolism. Cyanosis was extremely intense. She was put in a well ventilated, large oxygen tent and the concentration raised to 60 per cent. The cyanosis and dyspnea still persisted and the patient remained quite uncomfortable. Not until the concentration was elevated to 95 per cent was the patient made comfortable. Concentrations of between 80 and 95 per cent were maintained continuously for a period of six days. On the sixth day we were able to reduce the concentration to 60 per cent. Two days later we removed the patient from the tent, with complete recovery. As regards the use of nasal catheters, frequently patients complain of irritation if the catheter is less than 4 inches long. On the other hand, if the nasal catheter is so long as to reach almost to the glottis, it may cause cough and irritation. I have used the happy medium, seeing that the catheter (not the urethral catheter, but a soft rubber tube F. 8 in diameter with 4 or 5 terminal perforations) is at least 4½ or 5 inches long, so that the oxygen flows into the pharynx, and thus irritation of the nasal mucosa, or of the glottis or lowermost part of the pharynx is avoided. In that way one can frequently administer as high as 8 liters of oxygen per minute, which readily insures concentrations of 50 per cent. I do not employ a wash bottle with the nasal catheter, as it is not the absence of moisture that is irritating.

DR. ALVAN L. BARACH, New York: We have had at the Presbyterian Hospital thirty-five cases carefully treated with oxygen over a long period of time. Some of these patients were observed in the hospital for periods of from one to five months and others for shorter periods. These were patients who have not regained compensation under ordinary routine methods. Patients with rheumatism of the heart respond to

oxygen poorly. When they do improve, taking them out of the oxygen room or the tent frequently results in a recurrence of decompensation. An entirely different effect is obtained in the treatment of patients with cardiac failure the result of a myocardial fibrotic or degenerative lesion and not of rheumatism. In these patients we have seen a restoration of compensation in from two to four weeks. This was attended by a significant rise in the carbon dioxide content of the arterial blood, sometimes as high as 20 or 30 volumes per cent. As the patient gets better and the pulmonary ventilation falls, the carbon dioxide content of the arterial blood will gradually be decreased toward the normal level. If we gradually take these patients out of the oxygen, we find that many of them maintain compensation for a year or longer. We have had patients who were unable to walk and who subsequent to oxygen treatment of three or four weeks were able to walk as far as two miles a day. I think that what Dr. Friedrich said is probably true. I have been impressed by the failure to have animals live in a concentration of oxygen of over 75 per cent. I spent several years trying to get animals gradually to endure concentrations of 80 per cent, keeping them at 50 per cent and then 60 per cent; but every time the concentration went over 75 per cent the animals developed pulmonary edema in two or three days and died. Sayers has shown that if animals are kept in oxygen sixteen hours out of twenty-four they may survive without developing that irritating pulmonary lesion. I think it is probably true that a great many of the cases that I have treated might have been better helped by the use of very high concentrations of oxygen for shorter periods.

DR. ROBERT L. LEVY, New York: One who is going to administer oxygen to patients with acute cardiac failure should not wait too long. The oxygen should be given in sufficient concentration to overcome anoxemia and long enough to enable the heart to recover from its acute functional disturbance.

HIGH FREQUENCY CURRENTS IN PERFORMING BIOPSIES

JACQUES P. GUEQUIERRE, M.D.
AND
FRED D. WEIDMAN, M.D.
PHILADELPHIA

Templeton [1] and others [2] have already indicated the value of high frequency currents in the treatment of various dermatoses requiring excision, and others have indicated the value of the so-called radio knife in such major procedures as amputation of the breast. The present communication, however, has nothing to do with such phases of the field. It is true that Templeton spoke of the usefulness of this modality in performing biopsies and exhibited several photographs. However, the attempt was not made in such presentations to distinguish between the value of the coagulating and cutting currents. It is to this particular phase that the present communication is confined.

It has been the experience of doubtless many pathologists to have specimens submitted for histologic examination which have been removed by the coagulating current and in which the severity of the coagulative processes has been sufficient to compromise or even destroy the value of the specimen for histologic examination. This has naturally prejudiced them against such a technic.

Accordingly, it came as a pleasant surprise to us to encounter certain specimens in which the zone of coagulation necrosis was extremely narrow and in no way interfered with histologic interpretations. In checking up for an explanation it was found that the cutting current rather than the coagulating current had been employed in such cases, and, except in cases in which we had purposely used the coagulating current to note its effect, its use was due to our failure to "throw the switch" to the cutting current. Consequently we have confined ourselves entirely to the employment of the cutting current for biopsy purposes and with such good results that we feel it advisable to emphasize the availability of this technic in the routine performance of biopsies. Our experience parallels that of Dr. F. H. Krusen,[3] who has been using this method for some time.

We have already pointed out the difference between the therapeutic and the biopsy aspects of the situation and the fact that we are confining ourselves to the biopsy phase. In doing this it is appreciated that a certain conflict might arise; i. e., that by employing the cutting current in malignant conditions, the advantage of coagulative effects would be forfeited. We feel, however, that this disadvantage is only apparent and we overcome it by always coagulating or desiccating thoroughly the site of the excised lesion. With lesions so large that it would be inadvisable to excise them in toto with the cutting current, we excise only a small portion for histologic examination and then promptly follow up with the coagulative technic. We excise the smaller lesions in toto and retain the entire sample as a biopsy specimen. In this way any clash between the welfare of the patient (necessitating coagulating current) and an optimum histologic section (cutting current advisable) is avoided.

We feel particularly justified in calling attention to our experience, because the adoption of the cutting current technic will make for the performance of larger numbers of biopsies. Thus, the endotherm apparatus is standard equipment in practically every dermatologist's office and it needs but the turn of a switch to make the cutting current available. It is not necessary to call on the surgical tray except when bleeders are encountered. This makes for rapidity and simplicity.

Furthermore, there is a psychologic aspect. The inherent aversion of the patient to the use of the scalpel or other cold steel is overcome. The operation is bloodless and sutures are unnecessary. All these circumstances may play a part in forestalling misgivings on the part of a certain type of patient. The postoperative events are free of unpleasant memories, for both the physician and the patient. The base of the wound can be coagulated or desiccated immediately after the specimen is removed. It is sterile, heals nicely and does not leave a highly disfiguring scar. All these factors may be cited as advantages of the cutting current technic over ordinary surgical excision, and, when explained to the patient tactfully, will tend to secure his consent for the operation and permit the acquirement of a specimen that will be useful for histologic examination.

THE LIMITATIONS OF THE CUTTING CURRENT

The most serious limitation of the cutting current is muscular twitching; workers are in agreement that nothing has been discovered thus far which can prevent it. The sudden spasm interferes with the precise course

From the Laboratory of Dermatological Research, University of Pennsylvania School of Medicine (Dr. Weidman).

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Templeton, H. J.: California & West. Med. **30**: 83-87 (Feb.) 1929.

2. Ward, G. E.: Value of Electrothermic Methods in Treatment of Malignancy, J. A. M. A. **84**: 660 (Feb. 28) 1925. Hollander, Lester: M. Rev. of Rev. **34**: 203 (April) 1928.

3. Krusen, F. H.: Personal communication to the authors.

of the needle and hence of the incision. As a result, the needle may be directed to some portion of the specimen which might be particularly useful in the histologic examination and which would therefore suffer an undesirable coagulation. A second disadvantage is encountered in extremely small lesions. In a trial on a guinea-pig as well as in operating on patients we have found that it is not advisable to attempt to secure a specimen less than 6 or 8 mm. in diameter. It might also be considered a disadvantage that a steady hand and reasonable cooperation on the part of the patient are necessary; these, however, are problems that would have to be met in the individual case.

Apparatus.—It is not likely that the instrument of one manufacturer will be found superior to that of another. Our own instrument is a Westinghouse Model F endotherm. Each operator will establish his own personal equation by trial and error as to the optimum "cutting intensity" and "current controls" to be employed. In our own instrument the best results were secured with the cutting intensity at E and the current control at 7. With this a sufficiently rapid excision was secured with a minimum of coagulation necrosis around the specimen. Incidentally, we found that the amount of necrosis was far less, indeed almost nil, at the bottom of the specimen; it was much greater along the line of primary incision which is commonly known as the line of circumvallation.

Technic.—This does not differ from that employed in ordinary therapeutic work. Procaine hydrochloride anesthesia is employed. The patient is made as comfortable as possible and the hand of the operator is steadied by appropriate means. The attempt should be made to circumvallate the lesion completely down to the subcutaneous tissues at one maneuver; i. e., to avoid if possible the necessity of retracing or supplementing the original incision. After circumvallation the lesion can be transfixed with an ordinary sewing needle, which is thereafter used as a tractor during the removal of the lesion from the parts underneath. After the removal of the specimen, a nonbleeding but somewhat moist base remains, which is then coagulated or desiccated and painted with an antiseptic such as gentian violet. Sutures are not employed.

SUMMARY AND CONCLUSIONS

The objections of the pathologist to the use of coagulating currents can be largely overcome by adhering to the cutting current. The method is not infallible, owing to such factors as muscular twitch, an unsteady hand, or an anatomic location such as the face, which limits the removal to a very small specimen. Barring these conditions the readiness of the apparatus, the bloodlessness, the insensitiveness to postoperative pain and the psychologic effect on the patient all contribute to the securing of a greater number of biopsies, which are so sorely needed for the advance of dermatology in general, to say nothing of the assistance that accrues in confirming the diagnosis.

1930 Chestnut Street.

ABSTRACT OF DISCUSSION

DR. GEORGE M. MACKEE, New York: Until the last few years I was unable to remove small pieces of tissue with the high frequency current without causing too much coagulation for satisfactory histologic study. Now, however, with better apparatus and improved technic, I find it possible to remove all but very small pieces of tissue with the cutting current, with an amount of coagulation that does not preclude adequate microscopic examination. I am therefore in agreement with the authors. The apparatus must be modern, the controls carefully adjusted, and the excision performed quickly. The novice should first experiment on a piece of raw beef and then on animals. In my experience, surgical diathermy gives rise to a larger percentage of hyperplastic scars than do the scalpel, punch or scissors. As a rule, however, the hyperplasia usually disappears in time, at least to a large degree. A wound caused by the cutting current will not heal by primary intention, as a rule, unless the fine line of coagulation is removed before the wound is closed. Unless sutured, wounds caused by a biopsy punch are round and rather conspicuous. The question of a cicatrix is important in some instances. The principal reason for using the cutting current when performing a biopsy is that many believe that the coagulation prevents spreading or metastasis of malignant cells. It now appears to be the consensus among pathologists and among cancer experts that this danger has been overemphasized. It is claimed now that there is no danger, provided the instrument is sharp and the tissue is not massaged or squeezed.

DR. MAX S. WIEN, Chicago: I have been using the cutting current at the Cook County Hospital in the treatment of superficial malignant growths. I have also taken specimens of tissue for histologic study and with large specimens had no trouble with distortion as the result of the current. In the smaller specimens, however, which have been studied in collaboration with Dr. Jaffe at the hospital, there were noted changes that were akin to those produced by electric burns resulting from accidental or intentional electrocution. These consisted of dehydration and coagulation with increased basophilic staining and liquefaction of the connective tissue in the pars reticularis, and a stretching of the epithelial cells of the rete malpighii with strandlike proliferation into the cutis, forming whirls in some places. It was only in the smaller specimens that we noted such changes; otherwise we have found it a very satisfactory method for removing larger pieces of tissue for histologic study.

DR. FRED D. WEIDMAN, Philadelphia: No doubt every dermatologist has excised lesions as a therapeutic rather than diagnostic procedure and has turned them over to the laboratory in the hope that the pathologist may be able to salvage something out of the perhaps tattered and "cooked" specimen. As a result, the pathologist has rightly become prejudiced against coagulating modalities in securing biopsy samples, and it is the duty of the clinician to correct, if he can, these shortcomings, which waste the time of the pathologist and give no information to benefit the patient. I must confess that I prompted Dr. Guequierre to report this experience as part and parcel of a general propaganda in favor of more and and better biopsies. As to the danger of biopsies in malignant conditions, I was influenced largely in favor of doing them by a paper that Francis Carter Wood read before the Philadelphia Pathological Society ten years ago. He used one series of cancer-bearing mice on which biopsies were done, another series in which nothing was done, and a third series in which he massaged the experimental tumors. He found at necropsy that there was not any increase of metastases in those in which biopsies had been done; in those in which the lesions had been massaged there was a marked increase. At the Philadelphia Oncologic Hospital we take biopsy specimens of every lesion as a routine procedure even when the clinical diagnosis is clear. We do this with the specific purpose of being able to check up later on those cases in which we get remarkable therapeutic results in what appeared to be perhaps hopeless cases, under these circumstances. The question always arises whether we were dealing with a malignant condition or only something that looked like it. Did we err in our clinical diagnosis? Then we always have the biopsy sample to go back to as a check. Furthermore, I can't say that we have had any evidence that the incidence of metastasis has been any greater as the result of our routine and therefore extensive biopsy procedures. As to the detailed cytologic changes which Dr. Wien brought up, those have been elaborated by Dr. Ellis of Chicago recently in the *Archives of Pathology*. They have not fallen in the field of our communication.

THE ASSOCIATION OF SINUS DISEASE AND MIDDLE EAR INFECTION

M. M. CULLOM, M.D.
NASHVILLE, TENN.

The conclusions arrived at in this paper are based on more than one hundred cases of mastoiditis in private patients which I have observed since the influenza epidemic of 1918. A great many mastoid operations were performed in my clinic at the Vanderbilt Hospital. As I did not perform these operations it was not possible to get a thorough examination of the sinuses in connection with the mastoiditis, so those cases have not been taken into account. The case histories of these patients read so much like the histories of the patients that were carefully examined with respect to their sinuses, however, that it leaves no doubt in my mind that sinusitis was present in these cases to a very large per cent.

Following the epidemic of influenza in 1918 there were a great many cases of mastoiditis. There were also many cases of sinus infection. The association of sinus disease and middle ear infection did not make a definite impression on me until 1920. Then I had a run of mastoid operations in which I also did operations for drainage of the sinuses. At that time I had as assistant Dr. F. E. Hasty. I called his attention to the association of the two and we began to investigate their relation. The association was quite striking and I took to having a roentgenogram made of the sinuses in each case requiring one of the mastoid. We found that about 85 per cent of our mastoid cases also presented cloudy sinuses. We then discovered that there was in every case a cloudy sinus on the same side as the mastoiditis. There were any number of cases of middle ear infection which did not eventuate in a mastoid infection of sufficient severity to call for a roentgen examination which showed a cloudy antrum under transillumination on the same side as the middle ear infection.

In April 1925 I read a paper before the Tennessee State Medical Association on the subject of disease of the nasal accessory sinuses. This paper was written in 1924. In this paper I said:

> While I have spoken of the various complications of sinus disease, I wish to emphasize one that has been brought home to me forcibly. I was somewhat surprised in reviewing our cases of acute mastoid abscess to find that practically all of our cases done during the last four years had empyema of one or more sinuses. There should be nothing surprising in the fact, however, when we consider that the pus draining into the postnasal space passes over the orifice of the eustachian tube. The surprising thing is that they do not all get infection of the ears.

In March 1926 I [1] reported a case and showed the patient before the Nashville Academy of Ophthalmology and Oto-Laryngology. I demonstrated a very cloudy right antrum by means of transillumination in the patient who had a discharging right ear. The case report was as follows:

> A., a white man, aged 29, had not been feeling well the week of March 1. On Sunday, March 6, he had pain in the right ear. On Tuesday, the right ear began to discharge and the pain in the ear stopped. The patient continued to feel ill and the ear continued to discharge. He consulted me, Saturday, March 13. The patient was pale and looked ill. There was a discharge from the right ear. After cleansing the ear, I found a small perforation in the drum membrane. There was a unilateral purulent discharge from the right nostril, causing excoriation of the skin. Transillumination showed the right antrum dark.

This case is reported to illustrate a group of cases that I have observed for the past six years; namely, middle ear abscess following empyema of the antrum on the same side as the ear involved. I would say, roughly, that 85 per cent of my mastoid cases coming to operation during the last six years have shown an infected antrum on the same side as the mastoid involved. There is nothing mysterious about this. The only thing surprising is that in all patients with antral empyema abscess of the middle ear does not develop, as the pus draining downward runs over the orifice of the eustachian tube, and the infection easily follows. It is the same mechanics that gives patients a middle ear abscess following irrigation of the nose.

In the fourteen years that have elapsed since I began to observe the association of sinus disease and middle ear infection, many observers have noted the association between infected sinuses and middle ear abscess. Unknown to me, Watson Williams had reported the same observations in a paper published in October 1924. In a study of forty-two consecutive cases of surgical mastoiditis he found the nasal sinuses infected in twenty-eight instances. In twenty-five of these cases the sinus infection was on the same side as the mastoiditis. As far as I know he has not followed up these studies.

In 1929 I read two papers on the etiology of middle ear suppuration, one before the Tennessee State Medical Association in April and one before the Southern Medical Association in November. I showed x-ray plates of the mastoids and the sinuses, demonstrating the association of mastoiditis and sinus suppuration on the same side. At the Philadelphia session of the American Medical Association I had an exhibit of x-ray plates in the Scientific Exhibit showing mastoiditis and sinus suppuration on the same side with the exception of one case, which showed a cloudy antrum on the right side and cloudy cells in the left mastoid.

Campbell's [2] paper in 1932 on the association of acute sinusitis and acute otitis media in infants and children is based on the study of 150 cases of otitis media in children between the ages of 2 days and 11 years. One hundred and ten of the children were under the age of 2 years. In 140 of the 150 cases a positive diagnosis of purulent sinusitis was made by means of the nasoscope. Of the remaining ten cases six were classified as doubtful because no pus could be seen, but the intranasal appearance indicated probable infection of the sinuses. Only four patients showed no evidence of sinus infection when examined by the nasoscope and in each of these cases a thick purulent secretion had been draining from the sinuses for long periods suggesting that the otitis was of the chronic type. In such cases the purulent sinusitis probably present at the start of the sinusitis had apparently cleared up. If the six doubtful but probable cases of sinusitis are classed with the positive ones, the percentage of cases in which acute sinusitis accompanied the otitis is 97.3. In twenty-five cases roentgenograms were made and in only one case in which there was nasoscopic evidence of sinusitis

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Cullom, M. M.: Laryngoscope **36**: 426 (June) 1926.

2. Campbell, E. H.: Association of Acute Sinusitis and Acute Otitis Media in Infants and in Children, Arch. Otolaryng. **16**: 829 (Dec.) 1932.

were the roentgen examinations negative. The patient, an infant of 3 months, showed a large amount of pus in both middle meatuses and both spheno-ethmoid recesses. Of eighty-five infants under 1 year of age with otitis media, definite infection of the sinuses was found in 97.5 per cent and probable infection in 100 per cent.

Dr. Campbell says:

> While the total number of cases is small, it represents a consecutive unselected group and is therefore probably an accurate indication of the percentage of association of the two conditions. Therefore, it seems reasonable to conclude that when an aural discharge is present in an infant, sinusitis is also present. This should be of considerable significance to the pediatricians, who for the past few years have stressed the importance of infection of the ear as a factor in gastro-intestinal disturbance of infants but who have not taken into consideration the coexisting sinus infection. If, as they assume, infection of the ears have such a deleterious influence on the infant, how much greater effect would the infected sinuses have, which produce perhaps twice as much pus as do the ears. It seems to me that infected sinuses are of more importance than infected ears in gastro-intestinal conditions, and that it would be as rational for the pediatrician to advocate operative treatment for such conditions of the sinuses as to insist that mastoidectomy be performed.

This is directly in line with an observation I made in two papers read in 1929 before the State Medical Association of Tennessee and the Southern Medical Association. In these papers I said:

> Many observers have noted gastro-intestinal disturbance in infants as a result of an obscure infection in the mastoid. The clinical course of these cases was athrepsia, vomiting, diarrhea, final cachexia and death. Autopsy disclosed in all of them a purulent infection of one or both mastoids. Floyd of the University of Iowa and Alden and Lyman of Washington University have made a practice of opening the mastoid of these cases, and report good results if done early. Since I have noticed the intimate connection between purulent sinus infection and mastoiditis, I have wondered if there were not a previous sinus infection in these cases from which the mastoid became infected. It would be interesting if all the children showing this syndrome could have an x-ray of the sinuses.

I am deeply grateful to Dr. Campbell for carrying out this exhaustive study of the association of acute sinusitis and acute otitis media in infants and children. In a measure it establishes the truth of the observation I made seven years ago. The facts he established are of supreme importance and should have a direct bearing on the question of prognosis and treatment of acute otitis media.

Fowler[3] approached the subject from a different angle. The study is based on the examination of 100 children (200 ears). There were five cases of nonsuppurative otitis media, thirty-seven of healed suppurative otitis media, thirty-four of recurrent suppurative otitis media, thirteen of chronic suppurative otitis media and eleven of nerve deafness. The study was extremely thorough. The diagnosis was made not alone from the immediate pathologic conditions presented but also from the whole history of the case. The roentgen examinations were interpreted by Dr. Frederic M. Law, without knowledge of the clinical diagnosis. The youngest patient was 3 years of age, the oldest was 19, and the average of the group was 11.

There was a history of discharge or pain in 78 per cent of the cases, of exanthems in 65 per cent, and of colds, influenza or pneumonia in 66 per cent. There were seven mastoid operations. In the five cases of chronic nonsuppurative otitis media all presented histories of repeated colds, and 60 per cent a history of earache. It is probable that all the patients had suffered from infection of the ear.

The roentgen examination showed that the sinuses were involved in 86 per cent of the cases. This is interesting, as my observations reported in 1926 showed that 85 per cent of my mastoid cases showed involvement of the sinuses by roentgen examination. If the other 15 per cent could have been examined at the inception of the suppuration I have the feeling that practically 100 per cent involvement of the sinuses would have been found.

To my mind this study of Dr. Fowler's constitutes one of the most important contributions that has been made to the study of deafness. Since 1920 I have had the growing conviction that nearly all forms of deafness are the result of infection and that the infection for the most part is by continuity and not blood borne.

There are many who can remember when Dr. Shambaugh first raised his voice against the orthodox pronouncement that deflection of the nasal septum causes deafness. I think he is now coming into his own and that the newer pathology will place the blame where it belongs, on infection. Not that I deprecate the operation of submucous resection. Deflection of the septum is a grave offender by reason of blocking the drainage from the sinuses and thereby setting up a condition which may result in purulent middle ear infection and mastoiditis but also thickening of the mucous membrane and resulting deafness even if no diagnosis of purulent infection can be made. How often has the surgeon removed a deformed nasal septum to find behind it an active ethmoiditis or a blocked antral orifice?

Since observing the association of sinus infection with middle ear infection I have examined my hard-of-hearing patients for associated sinus infection, which has been found in a very large percentage of cases. Two cases are reported that were of especial interest to me.

> H. H. C., a boy, aged 9 years, was brought to me suffering with an acute infection in his left maxillary sinus in July 1919. I treated him until the acute symptoms subsided. In 1929 he returned on account of deafness in his left ear. His left ear drum membrane was thickened dull in appearance with absence of light reflex. Bone conduction was better than air conduction, Weber lateralized to the left, a watch could be heard at 8 inches. Transillumination showed a cloudy left antrum. A roentgenogram made by Dr. Shoulders showed the left antrum to be very cloudy. All other sinuses were clear. He had been away at school most of the time since I had treated him in 1919. He had had treatments for sinus disease numerous times while he was away.
>
> In 1929 I was consulted by his mother, who had noticed for some time that she was gradually losing her hearing. The drum membranes of both ears were dull with very little light reflex. Bone conduction was better than air conduction. Weber not lateralized. A watch could be heard at 4 inches in both ears. Transillumination indicated cloudiness of both antrums. Dr. Shoulders reported from roentgen examination that both antrums were cloudy, indicating a chronic thickening of the membranes.

These two cases furnish food for thought. May they not furnish a probable explanation for much hereditary deafness? If the son had been deaf in both ears it might not have made such an impression. But I was able to show from my records that the son suffered with unilateral sinus disease in his ninth year. He returned in ten years with a well developed chronic

3. Fowler, E. P.: The Incidence of Nasal Sinusitis with Diseases of the Ear, Arch. Otolaryng. **9**: 159 (Feb.) 1929.

antrum infection on the same side and a well developed chronic otitis media catarrhalis on the same side, while the maxillary sinus and the ear on the other side were normal. Every one knows how frequently sinus disease is found in families and I have the strong feeling that it is the tendency to sinus disease that is inherited rather than familial deafness.

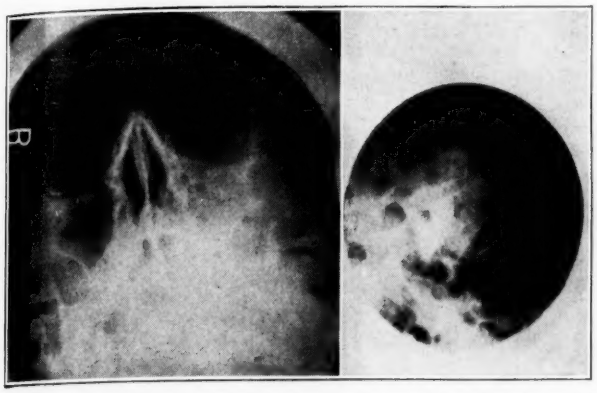


Fig. 1.—At left, densely cloudy left antrum, at right, cells of the left mastoid broken down, in the case of J. C., a boy, aged 16, with discharging ear four months following a cold.

In "Etiology of Middle Ear Suppuration," Southern Medical Association, November 1929, I listed among the causes the great prominence given by most authors to specific infections in the exanthematous diseases, scarlet fever, measles, diphtheria and epidemic influenza. I made the following commentary:

> The cases of infectious diseases attended by middle ear abscess would, I believe, show a very large percentage of existing purulent infection in some one of the accessory sinuses if they were properly examined. The swimming pool and the nasal douche cases are strictly analogous to infection from infected sinuses. Purulent material from the patient's own nose is washed into the eustachian tube or else water infected with virulent bacteria gives entrance through the nose.

The views expressed in these words based on my observations covering a nine year period have since received abundant confirmation in the work of others.

Childs[4] submits a study of 383 cases of scarlet fever admitted to the City Hospital and examined there by each department participating in the study. Roentgenograms were made during the first week of the disease. A group of these were reexamined at a later date at about the twenty-eighth day of the disease. Roentgen examinations were carefully made in the chin, nose, forehead and lateral positions. No attempt was made to take the sphenoids. They were classified as clear, hazed and dense, and opaque. These studies were begun in February 1930 and still continue.

Hoople and Cave[5] presented a study of the same group of cases.

In only 9 per cent were the sinuses found clear. In other words, 91 per cent of the 383 cases showed sinus involvement by roentgen examination, 79 per cent showed hazing and density while 12 per cent were classed as opaque. The frontals were clear in 110 cases. In 30 per cent, or 123 cases, there was bilateral hazing of the maxillaries and ethmoids. There were 104 cases of bilateral hazing of the maxillaries, or 27 per cent. Pansinusitis was present in nine cases. There was maxillary involvement in well over two thirds of the cases. Ninety cases were restudied and only 12 per cent showed improvement. Thirty-six per cent showed no improvement and in more than 50 per cent there was definite evidence of the progression or extension of the sinus involvement.

There were no clear sinuses in the 3 and 4 year old group. From 5 to 14 the sinuses were clear in 8 per cent, while from 14 years on the proportion was from 11 to 14 per cent clear. The conclusion drawn by Baulmen, quoted by Silverman, is that the younger the child the more likely is sinus involvement. Thirty-three patients developed mastoiditis, shown by roentgen evidence and confirmed by surgery. In every case of mastoiditis there was roentgenographic evidence of sinusitis on the same side as the mastoiditis. A most significant statement to my mind is that in no case of clear sinuses did mastoiditis develop. This is strong presumptive evidence that middle ear suppuration comes from infected sinuses and that adenoids and tonsils play a very little rôle in its inception, though they may be a factor in its continuance. In the four groups of cases that are reviewed in this paper there are four separate angles of approach.

My group of considerably more than 100 cases dealt mainly with adults. Dr. Campbell's group of 150 cases dealt with infants. Dr. Fowler made a study of deafness in children which demonstrated 91 per cent of associated sinus disease. Dr. Hoople's series dealt with a very large number of scarlet fever cases in young children. The percentage of sinus disease present in his cases was about 91. Dr. Campbell found more than 90 per cent associated sinus disease while my mastoid cases showed about 85 per cent associated sinus disease. It would appear from these figures that the percentage holds about equally for all ages.

Now I shall pause and take stock of the case I have made out against sinus disease. As long ago as 1920 I began to suspect sinus infection as the guilty cause of middle ear infection and mastoiditis. A close follow up of mastoid and middle ear infection in more than 100 private cases of mastoiditis and a great many more cases of middle ear abscess that did not eventuate in surgical mastoiditis showed a demonstrable sinus infection in 85 per cent of the cases. Many ear men have

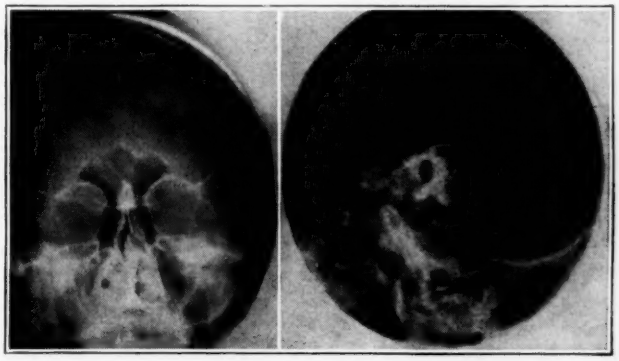


Fig. 2.—At left, both maxillary sinuses cloudy, at right, involvement of left mastoid cells, in case of M. H., a boy, aged 16, both of whose ears had been discharging for some time. Lately there had been pain in the left mastoid region. The left mastoid was operated on. The maxillary sinuses were drained a year later, after which the chronic purulent discharge from the right ear ceased.

communicated to me that investigation of their cases since I called attention to the condition has confirmed my observations.

1. The significant feature of these investigations is the fact that sinus infection was found on the same side as the mastoid in nearly all cases.

4. Childs, D. S.: New York State J. Med. **33**: 141 (Feb. 1) 1933.
5. Hoople, G. D., and Cave, L. S.: Otorhinologic Aspects of Scarlet Fever, J. A. M. A. **101**: 1121 (Oct. 7) 1933.

2. Dr. Fowler found in his large group of children suffering from deafness that 91 per cent showed conclusive evidence of sinus disease.

3. Dr. Campbell found conclusive evidence of sinus disease in 91 per cent of 150 infants suffering from middle ear abscess.

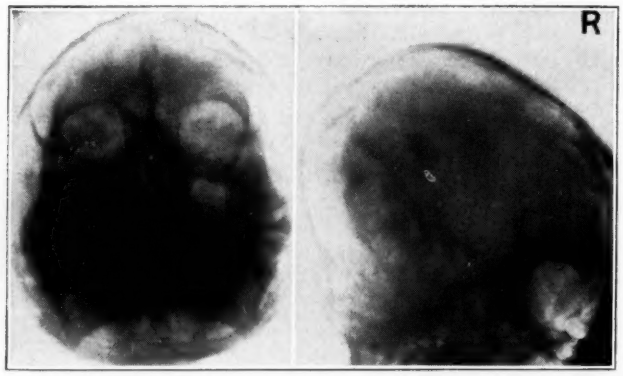


Fig. 3.—Sinus infection followed by mastoid infection on the same side; acute mastoid disease on right side with active symptoms; acute infection of all sinuses not recognized clinically. Reproduced from a roentgenogram sent by Dr. Willis F. Manges, head of the department of roentgenology at Jefferson Medical College, Philadelphia. Dr. Manges sent roentgenograms of three cases showing the association of purulent sinus disease with mastoid infection; the other two are not reproduced here, as this illustrates the type of disease.

4. Dr. Childs and Dr. Hoople examined 383 cases of scarlet fever and found the sinuses involved in 91 per cent of the cases.

5. To go outside the scope of the charges brought against the defendant sinuses in the title of this paper I think it is competent and material to introduce other evidence proved against said sinuses. I had an exhibit in the Scientific Section at the Philadelphia session of the American Medical Association in 1931 showing a large number of x-ray plates demonstrating the association of sinusitis and nonspecific infections of the chest. Many of these patients were under treatment for supposed tuberculous infection. This exhibit was confirmatory of the work of Mullen, Manges, Jackson and others.

6. While the connection between sinusitis and retrobulbar neuritis is not on such a sound basis, the work of Leon White and others, as shown by Gordon Hoople, cannot be ignored. The weight of evidence is against the sinuses here, and further investigation will doubtless confirm their guilt.

7. It has long been believed that sinus disease is an etiologic factor in pneumonia, from the high percentage of infected sinuses found post mortem in patients dead of pneumonia. I feel that a case has been made out against infected sinuses that is truly appalling. The infected sinus is taking up a campaign against other bodily structures which is disabling, crippling and death-dealing. It has been the fashion lately to decry the sinuses as an important focus of infection. In the light of the evidence I think it is the real factor in focal infection. I have the feeling that, owing to the position of the sinuses at the top of the upper respiratory tract, they are a menace to all lower lying structures. The drainage from infected sinuses flows down over the postnasal opening of the eustachian tubes and brings about infection of the middle ear. The drainage flows over the adenoid tissue and may be the factor in adenoid infection. It flows down over the faucial tonsils and may account for infected tonsils. The drainage follows the airway into the larynx and trachea and may set up pneumonia, bronchitis and nonspecific infections of the chest. The pus is swallowed in large quantities in severe cases and may set up digestive disturbances and interfere seriously with nutrition. It may be a potent factor in heart, kidney and joint disease.

The body may well be likened to a fortress or citadel. This fortress is beleaguered round about with billions of attacking forces seeking to gain entrance for the purpose of overwhelming and destroying it. The body, like a well designed fortress, is very well planned for defense. The skin may be described as the walls. The only way the invading host can effect an entrance through the walls is by means of a breach that comes about through traumatism. Like a fortress, the body has openings for the ingress of supplies and the excretion of waste.

If the enemy is debarred from effecting an entrance through the walls, where then is his best chance to gain admittance? Manifestly through the openings. What is the chance to effect an entrance through the openings designed for the excretion of waste? Not so good, as here the enemy would have to go against the current. Then evidently his main chance to get inside the defenses is through the openings designed for the reception of supplies. The enemy then seeks an opportunity to ride in on the food we eat, the water we drink, the air we breathe. Once having gained admittance, what does the enemy do? Having ridden in on the wings of contagion or infection through the air, or by means of infected food or water, he finds lodgment in a sinus, a tooth or a lymphoid structure. Having secured a footing he digs himself in and with that location as a base he multiplies and sends out attacking forces to find lodgment in other parts of the body, there to wield his destructive warfare until he is stamped out or until he permanently impairs or destroys the fortress.

It is evident that the great majority of bodily infections have their beginning in the upper respiratory tract. To you as ear, nose and throat men, what does this fact convey? To you is entrusted the front line of defense. You are the shock troops whose duty it is to meet the first furious onslaught of the enemy and stop him in his tracks. To you is given the organization of the clean-up squads that mop up the shell holes

Fig. 4.—At left, densely cloudy right maxillary sinus, at right, cloudiness of left mastoid cells, in case of Miss E. J., aged 28, who had influenza. The left ear drum had been incised, after several days of suffering, one week before these roentgenograms were made. This is the only case of the author in which the infected sinus was on the opposite side from the infected mastoid. This mastoid cleared up without operation.

and underground hiding places of the enemy. You are hunting in big game country and you are on the trail of a quarry that is both cunning and dangerous. For thirty-eight years I have followed his trail, witnessed his depredations, and learned something of his habits,

his method of attack and his means of defense. He is now brought into the open more than ever before. It is our business to meet and destroy him. I do not share the fashionable pessimism of the present day in regard to the sinus problem. The surgical problems of the sinus are not different from surgical principles applied

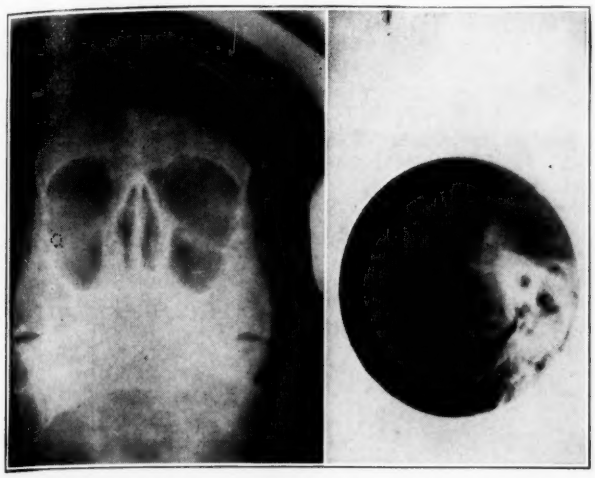


Fig. 5.—Cloudy right antrum, cells of right mastoid very cloudy, and very large mastoid filled with pus, in J. E. F., a boy, aged 11. This case was very interesting, as the author predicted the outcome. The mother telephoned that the boy was in bed with influenza and was having a bloody discharge from the right nostril. The author told her that in a few days an abscess would probably develop in the right ear, which might go on to a mastoiditis. In five days he was brought to the office with an abscess in the right ear, which was incised under gas anesthesia. A profuse bloody discharge ensued for ten days and the mastoid became involved and went on to operation.

to other parts of the body. It is when we neglect simple surgical principles that we go wrong. In dealing with the sinuses we have a problem worthy of our best skill and I am optimist enough to believe that the ear, nose and throat profession will solve it.

CONCLUSIONS

1. One thing stands out with startling distinctness in these studies and that is how intimately infection in the middle ear is bound up with infection in the paranasal sinuses.

2. When one considers the fact that four different types of investigation show from 85 to 95 per cent of sinus involvement in middle ear infections, the magnitude and importance of the sinus problem becomes apparent.

3. Careful investigation shows sinus involvement in 91 per cent of a large number of cases of scarlet fever. The inference may be drawn that the other exanthematous diseases and epidemic influenza have also a high incidence of sinus involvement. From this it can be seen that a large percentage of the population have sinus involvement at one time or another. This means that a large proportion of the population are menaced by infection that may result in deafness, disease and death.

4. Sinus disease appears to be largely confined to human beings. Other animals appear to be practically immune to sinus infection and its crippling sequelae. When our ancestors walked on "all fours" the openings in maxillary sinuses were at the bottom or most dependent portion, thereby being in the most favorable position for drainage, as was also the opening in the sphenoid sinus. When man began to walk in the upright position the openings in the antrums were thrown to the top, or in the most unfavorable position for drainage. Hence it appears that sinus disease is a penalty man pays for assuming the upright position, thus radically changing the design of the Creator.

1119 Bennie-Dillon Building.

ABSTRACT OF DISCUSSION

DR. LYMAN G. RICHARDS, Boston: Dr. Cullom has presented figures and clinical data which tend to establish beyond doubt that there is a frequent coincidence and to a certain extent, at least, an etiologic relationship between sinus disease and middle ear infection. In many respects this is what one would expect, in view of the histologic anatomy of the nose and nasopharynx. Both the mucous membrane lining the nasal sinus and that lining the middle ear are parts of the same generic structure and have a right to be involved in the same inflammatory process. The earlier in life that this inflammation occurs, the more likely is one to find involvement of both structures, as shown by Campbell's figures, since in the infant the wider eustachian tube and the larger sinus ostium result in a freer communication between the sinuses and the middle ear. As age advances and the more complicated anatomic developments take place there occurs a change in this relationship, such that there is a greater likelihood that sinus infections may develop without necessarily involving the now better protected middle ear cavity. Even so, in such generalized involvements of the upper respiratory tract as are seen in scarlet fever, there are noted, as confirmed by Hoople's figures, frequent involvements of the nasal sinuses and a concomitant middle ear inflammation. As further statistical reports appear, one wonders how far this indictment of the nasal sinuses is to extend. What, for instance, would an investigation of the sinuses in cases of measles or whooping cough, perhaps even of chickenpox, show as to sinus involvement, at least as evidenced by the x-rays? Does it not seem probable that any of the epidemic diseases involving the upper respiratory tract will show a high percentage of sinusitis? The important question seems to be whether such involvement is of such clinical significance as to require specific treatment. This decision cannot be based entirely on the roentgen examination, and yet it must be admitted that this diagnostic feature is the one most commonly used to establish the existence or nonexistence of a sinus involvement. Unless further procedures, such as the examination of the sinus contents, bacteriologic and serologic, are brought into play, the diagnosis is only an assumption, and even then the actual infection may be in the submucosal tissues, where its presence can be proved only by microscopic examination of the lining membrane. Noninfectious allergic swelling of the sinus mucosa is well known to give roentgenographic evidence of varying degrees of opacity, which it is all too easy to ascribe to infection.

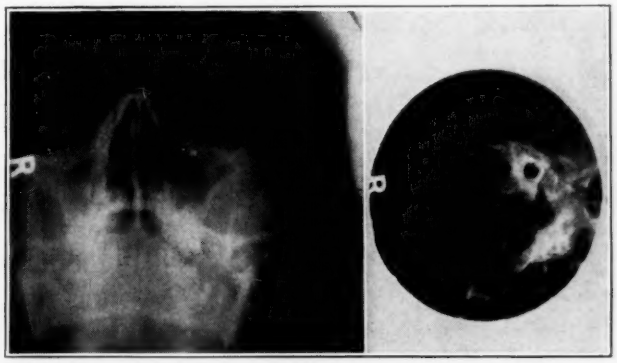


Fig. 6.—E. T., a youth, aged 17, had diphtheria at the age of 3 years. Since then there had been a chronic purulent discharge from the right ear. There was a large perforation of the drum. The color was very bad. Roentgen examination by Dr. Shoulders showed a very cloudy right antrum, right ethmoid, right sphenoid and right frontal sinus. The patient has a leaky heart.

DR. GORDON D. HOOPLE, Syracuse, N. Y.: If Dr. Cullom's contentions are true, or if they are but partly true, prophylaxis

should play an important part in the prevention of ear abscesses and surgical mastoids. About one half of the total number of cases of scarlet fever in Syracuse are hospitalized. It would seem that an equal number of surgical mastoids should develop in the hospital cases and outside the hospital. It would seem that more would develop in the hospital, as the more seriously ill are the ones who are hospitalized. Looking at the records, however, I found that, of the last seventy-one mastoidectomies done on patients with infectious diseases at the City Hospital, more than 70 per cent of the total had been on patients brought into the hospital after the ear infection had started. In many of these cases the nasal hygiene had been haphazard during the early part of the illness. This is suggestive evidence that proper care of the nose in head infections is important and, if observed, will cut down the incidence of otitis media and mastoiditis. We should pass this information on to the internist, and especially to the pediatrician. We must seek opportunities to emphasize the importance of pain in the ear, of colds and sinusitis in children, and bring out the fact that deafness in later life is often the result of neglect in these conditions.

DR. GEORGE E. SHAMBAUGH JR., Chicago: The author's observation of the frequent association of sinus disease and middle ear infection is interesting and significant. In many patients the otitis media follows the sinus infection, and here the sinus can be blamed, but in others it must be said that the two processes have begun simultaneously from an acute head cold rather than the one causing the other. The relation of purulent sinusitis to deafness is of particular interest, and here one must examine further the author's statement that "nearly all forms of deafness are the result of infection and that the infection is by continuity and not blood borne." Mild and moderate degrees of deafness in childhood are practically always due to a middle ear catarrhal or infectious process. As high as 10 per cent of all school children suffer from this type of deafness at one time or another, but in the majority of cases the hearing returns to normal at puberty when the adenoid tissue in the nasopharynx shrinks up. Purulent sinusitis is undoubtedly a very important factor in deafness in children, as Dr. Fowler's studies have shown. However, when deafness in adult life is considered, an entirely different picture is seen. Most of the mild and moderate cases of tubotympanic deafness have cleared up and have left scarred and thickened drum membranes, but essentially normal hearing. To be sure, there are a number of adults with mild deafness that is the result of childhood tubal catarrh. This type of deafness usually is not progressive, since the etiologic factor, the hyperplasia of lymphoid tissue in the nasopharynx, disappeared at puberty. The most important cause of progressive deafness in adult life is, unfortunately, otosclerosis, which accounts in my statistics for approximately 70 per cent of severe adult deafness. Since 18 per cent of adult deafness is due to a primary nerve defect, either congenital, acquired from an acute infection, acquired from a chronic focus of infection, or occupational, it is seen that in adult life the majority of severe deafness is not due to direct extension of infection from the nasopharynx; in fact, I have found suppurative sinusitis in very few severely deafened adults.

DR. S. S. EVANS, Memphis, Tenn.: The close association of the mastoid and middle ear with the nose and accessory sinuses would lead one to think that mastoid infections may as well be coincidental. It has often been suggested that the mastoid may be considered anatomically another nasal accessory sinus. I do not recall having seen an otitis media or mastoiditis following maxillary sinus infection of dental origin; therefore I have reason to believe that otitis media and mastoiditis depend more on the virulence of the organism and resistance of the host than on a primary sinusitis. It has been my observation that the otitis media often begins at the first stage of the infection at the same time the sinus infection begins. This is during the so-called stage of congestion and before there is much drainage. A bacteriologic and cytologic examination of the aural and sinus discharge along with a more careful history of the time of onset of fulness or pain experienced both in the ear and over the maxillary sinus area would be of interest. Whether the mastoiditis is secondary or coincidental, there remains the fact that both should be treated. One is prone to direct attention to the mastoid infection and neglect a sinusitis. A careful study of the sinuses should be made as a routine in all cases of middle ear disease.

DR. J. A. PRATT, Minneapolis: I believe that most of the infection when there is sinus involvement is due to mechanics rather than to continuity of inflammation. With the postnasal space filled with discharge, by sneezing, coughing and blowing the nose one forces the infected matter into the middle ear. If more children hawked back instead of blowing the nose to clean it, there would be about 50 per cent less deafness. Then, in blowing the nose, nearly every one holds one nostril and then the other, and, of course, if one side is blocked and the pharynx is filled with discharge and one closes the open nostril and blows, one is liable to inject the discharge into the middle ear. In Minneapolis, where there are so many lakes, mastoid cases appear during the dog days, because the children dive and come up and blow the nose. There will be a blockage, they will blow it into the ear, and in two or three days there will be a discharge from the ear. I have seen it after twenty-four hours, a suppurating, breaking drum. If people are taught to clean the nose by hawking back, or, if they do blow, to do it with both nostrils open, a great many of these cases will be relieved and improved, and this infection will not develop.

DR. M. M. CULLOM, Nashville, Tenn.: Dr. W. F. Manges, head of the department of roentgenology of Jefferson Medical College, makes it a practice to roentgenograph the sinuses of every mastoid patient he is asked to examine. In three cases that came to him the same day, sinusitis had not been suspected. He made roentgenograms on his own account and found sinus involvement in all three. He writes, "I am in entire agreement with you as to the causal relation between sinusitis and middle ear infection." It has been my experience that the symptoms of the cold come first and later on the development of the infection in the middle ear. I think that the infection in the sinuses is the cause of the infection in the ear.

Clinical Notes, Suggestions and New Instruments

SMALL SPINDLE CELL SARCOMA OF THE KIDNEY IN THE ADULT

E. A. WATSON, M.D., GRAND ISLAND, NEB., AND B. CARL RUSSUM, M.D., OMAHA

The rarity of spindle cell sarcoma of the kidney in the adult is indicated by the fact that Otto Lubarsch in 94,498 autopsies found twenty sarcomas of the kidney, only four of which were classified as spindle cell sarcoma. In the same series he encountered 201 carcinomas. At the pathologic institute of the University of Berlin from 1898 to 1922 there were found thirteen sarcomas in 30,820 autopsies. The rarity of the condition prompted Kretschmer and Randolph [1] in 1928 to record a single case encountered at the Presbyterian Hospital in Chicago. Hyman [2] observed only two sarcomas in ninety-nine renal neoplasms.

REPORT OF CASE

P. J. C., a white man, aged 45, the manager of a lumber company in a small town in Nebraska, presented himself for examination, Nov. 14, 1933, with the following history: His mother died at the age of 60, of an unknown cause. The father died at 54 of pneumonia. There were four brothers and four sisters living and none dead. The siblings were all in good health. The patient had had no disease of importance in the past. In 1916 a gastro-enterostomy was done for duodenal ulcer with satisfactory results.

The patient smoked, and drank three cups of coffee daily, a considerable amount of beer and some hard liquor. His strength was poor; he worried considerably. He tired easily

1. Kretschmer, H. L., and Randolph, H. S.: Spindle Cell Sarcoma of Kidney in Adults, Ann. Surg. **88**: 1033-1038 (Dec.) 1928.
2. Hyman, Abraham: Observations on a Series of Ninety-Nine Renal Neoplasms, Am. J. Surg. **5**: 102-127 (Aug.) 1928.

and slept well. His weight was 130 pounds (59 Kg.) and he felt that he had not lost much.

He complained chiefly of some headache, pain in the lumbar region which was not bad, and at times distention which was not severe. The appetite was poor; he belched some gas and at times was nauseated. There was some pain immediately after eating. The bowels were constipated and the patient had to take some kind of a laxative. There was no genito-urinary history such as burning or difficult urination, and the patient had noticed no cloudiness of the urine. He said that he had always had some gastric disturbance but was relieved of most of this after the stomach operation. In the past month there had been considerably more pain localized to the right lower quadrant of the abdomen, quite severe at times, and there was always some pain present. There was also pain in the back with weakness and tiredness, and increased nervousness. There was no increase of pain at night. His color was good and he was fairly well nourished. The skin was smooth and moist.

The eyes reacted to light and in accommodation. The teeth were all false. The heart was normal in size and there were no lesions. The chest was well filled. Excursion was good, with nothing abnormal found. The abdomen was flat and tender over the entire right quadrant, more marked in the lower region of McBurney's point. There was slight tenderness in the back over the kidney as well as a more marked tenderness in front. Neurologically the examination was negative.

The blood pressure was 120 systolic, 85 diastolic. The blood count showed: red blood cells, 4,640,000; white blood cells, 8,300; hemoglobin, 74 per cent (Dare).

Fig. 1.—Appearance of kidney.

The specific gravity of the urine was 1.012. The urine was acid and contained no albumin or sugar, casts or kidney epithelium. There was a trace of diacetic acid. The urine was about one plus positive for pus cells and a later specimen showed from two to three plus pus cells.

Because of the combined observations a Cole-Graham test was made of the gallbladder and a gastro-intestinal series of roentgenograms was made, which disclosed a poorly concentrating gallbladder, a working gastro-enterostomy and later a visualized and segmented appendix with tenderness over it, the greater tenderness being over the cecum.

November 22, because of the combined symptomatology and physical examination and carrying out the wishes of the patient, the appendix was removed. At this time the right kidney was explored and found enlarged to about one fourth of the normal size and smooth, and no defined mass could be felt. During the first four days of convalescence the patient was free from pain and very optimistic. From this period on he complained of pain in the entire right quadrant, which seemed to increase each day.

December 5, a diodrast injection was done and the following observations were recorded: No stone shadows were seen on the preliminary picture. A definite hydronephrosis of the right kidney with marked clubbing of the upper and middle calices was found. The lower calix was not filled in any of the pictures. The opening of the pelvis into the ureter was very sharp, as if contracted by a stricture or outside pressure. There was also a loculation of the right ureter just as it entered the bladder. The pelvis of the left kidney appeared normal. There was a slight dilatation of the lower end of the left ureter.

The diagnosis was hydronephrosis of the right kidney.

December 6 the patient was taken to the operating room and a ureteral dilator was passed on the right side. Following this, there was some amelioration of symptoms and on December 9 he was discharged from the hospital with instructions to return for observation.

Immediately after his discharge and on reaching home the pain became very severe and he returned to the hospital. December 20, a renal function test was done and the left kidney

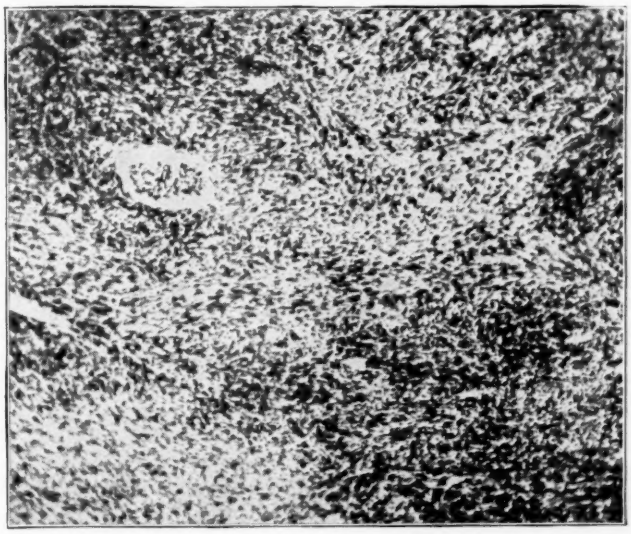


Fig. 2.—Section of kidney tumor under low power.

was found to be doing all the work. We still hesitated to operate, but the pain was severe, and at this time a mass could be palpated in the right kidney region, so an operation was deemed advisable, and on December 26 a nephrectomy was done. The lower pole was found adherent to the peritoneum with two small abscesses between, where an evident explosion of the lower pole of the kidney had occurred. This mass had evidently taken its origin in the cortex and had broken through the

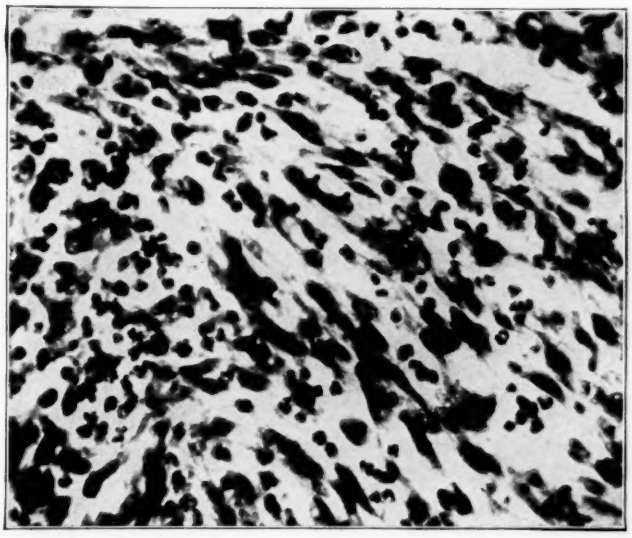


Fig. 3.—Section of kidney tumor under high power.

cortex with ectropion of the tissue like a full bloom rose. Photographs and measurements of the mass were taken after several days in a hardening solution, but they are fairly descriptive of the condition (fig. 1). The tumor mass measured, after hardening, 12 by 12.5 cm.

Pathologic examination of the kidney and the upper 1.5 cm. of the ureter revealed that the kidney was 12.5 cm. long and up to 7.5 cm. wide in its lower half and 8.5 cm. from front to back. It had been opened. The lower three fourths of the

kidney substance was replaced by a tumor mass, which was gray, mottled with yellow, nodular and bulged beneath the surface of the kidney. It compressed but did not invade or arise from the kidney pelvis.

Microscopic examination revealed a diffusely growing cellular tissue in which were embedded occasional glomeruli and kidney tubules. The cells making up the section were polygonal and spindle cells growing diffusely. There were many mitotic figures, and many areas contained numerous polymorphonuclear leukocytes. In a few places there were thin-walled blood vessels forming a skeleton for the tumor cells. There was none of the extreme lipoid deposit usually seen in a hypernephroma, and there was no tubular arrangement or papillary formation sometimes seen in carcinoma of the kidney. In the margin of the growth there was a fibrous thickening, apparently the kidney capsule.

The diagnosis was spindle cell sarcoma of the kidney.

This growth was evidently very rapid. We are confident that the majority of the growth and bursting of the kidney occurred between the operation of November 22 and the one of December 26.

May 1, 1934, the patient died at his home some distance from me. Our last examination was on Feb. 8, 1934. The patient was failing very rapidly and a mass the size of a grapefruit could be felt in the right lumbar and kidney region. We were informed that this mass had grown to fill the entire right quadrant of the abdomen. We are of the opinion that, at the time of death, metastasis of the lungs could also have been demonstrated.

407 First National Bank Building—306 North Fourteenth Street.

MEDIASTINAL AND INTRASPINAL PERINEURIAL FIBROBLASTOMA (HOUR-GLASS OR DUMB-BELL TUMOR) REMOVED BY ONE-STAGE OPERATION

STUART W. HARRINGTON, M.D., AND WINCHELL McK. CRAIG, M.D., ROCHESTER, MINN.

Many hour-glass or dumb-bell tumors have been reported in the literature, and they occur with relative frequency in the cervical, thoracic and lumbar spine. Those in the cervical and lumbar regions do not present the same surgical problem as do those in the thoracic region. The reason for this is that the extraspinal portion of the tumor in the thoracic region is in the mediastinum and encroaches on the adjacent intrathoracic structures. This involves the double surgical problem of combining the procedures for an intraspinal and an intrathoracic tumor. In a careful review of the literature, we have been unable to find the record of any case in which this type of tumor has been removed successfully in one stage. In the majority of cases the intraspinal portion is removed first, the intrathoracic portion being reserved for removal at a second stage. The procedures may be reversed, depending on the predominance of symptoms. Our reason for doing the operation in one stage was that, in our previous experience with the two-stage operation for the removal of similar tumors, complications followed that we thought could be avoided by removing the tumor in one stage.

REPORT OF CASE

A married woman, aged 34, consulted her physician because of occasional subjective sensations of weakness in the knees. This had been present to a mild degree since the birth of her child four years previously. During the past year these intermittent attacks had progressed to the point at which she felt definitely unstable on her feet, and in addition she recently had subjective numbness of the toes of both feet. Her examination at that time was essentially negative except for the roentgenogram of the thorax, which depicted a shadow in the left thoracic cavity, and in the lateral views the shadow was attributable to a mass in the left posterior mediastinum. It was suspected that the mediastinal tumor might be contributing to her symptoms and she was referred to us for further consideration.

From the Division of Surgery and the Section on Neurologic Surgery, the Mayo Clinic.

This case was of clinical interest because the early neurologic symptoms were mild, indefinite and associated with generalized symptoms of chronic nervous exhaustion. It illustrates the importance of a thorough general examination of patients with this type of complaint, for during the course of her general examination the roentgenogram of her thorax was taken and the lesion found in the posterior mediastinum. It is unlikely that the mediastinal portion of this tumor contributed to her symptoms, as benign tumors in this region rarely produce symptoms until they have reached considerable size, thereby causing pressure on the surrounding mediastinal structures. Among the patient's general complaints there were definite symptoms of weakness of the legs as well as numbness of the feet, which indicated that the mediastinal tumor might be of the dumb-bell type and that the neurologic symptoms might be due to mild pressure on the cord. By the time the patient had reported to the clinic for examination, her symptoms had progressed to the point at which definite signs of compression of the spinal cord could be elicited.

The general examination was essentially negative except for the roentgenologic examination of the thorax, which disclosed a circumscribed shadow of soft tissue at the left of the fifth and sixth ribs on the left side, posteriorly (fig. 1). A localized roentgenogram of the spine revealed erosion of the left pedicle of the fifth dorsal vertebra and upper border of the left pedicle of the sixth dorsal vertebra. The tumor was extruding through the intervertebral foramen between the fifth and sixth dorsal spines and into the mediastinum. The intervertebral foramen was eroded and enlarged by the extruding tumor. There was increase in width of the fifth intercostal space and erosion of the posterior inferior border of the fifth rib and posterior superior border of the sixth rib. A roentgenologic diagnosis of neurofibroma of dumb-bell type, invading both spine and mediastinum, was made.

Neurologic examination revealed a loss of epigastric, midabdominal and hypogastric reflexes, with diminution of the patellar and achilles reflexes on both sides. The gait was spastic and there was a slight area of anesthesia on the plantar surface of both feet. Spinal puncture was made, and the cerebrospinal fluid was found to contain 40 mg. of total protein, with a positive globulin reaction. There was no pleocytosis. A complete subarachnoid block was present, as demonstrated by the lack of response in the manometer when the jugular veins were compressed. The areflexia, subjective numbness and anesthesia, as well as the complete subarachnoid block, were indicative of compression of the spinal cord at a level corresponding to that of the mediastinal tumor disclosed in the roentgenograms. In view of the fact that the neurologic level of compression of the spinal cord corresponded to the situation of the shadow in the roentgenograms, a diagnosis of mediastinal and intraspinal perineurial fibroblastoma of the dumb-bell type was made. Because of the character of the tumor, the patient was seen jointly in consultation, and a one-stage operation was considered to be the operation of choice, unless contraindicated at the time of operation. As the intraspinal portion of the tumor was the most important factor in producing the symptoms and involved the most important structures, it was deemed advisable to expose this portion of the tumor first, and, as the mediastinal portion was large, we felt that it should be removed through a separate incision.

Operation was carried out, April 16, 1934. Choice of the method of administering the anesthetic was important in this case because the tumor was in the posterior mediastinum. Tumors in this region and of this size are usually very adherent to the underlying structures, and in many instances the pleura is unavoidably opened during operative removal of the growth, producing an open pneumothorax, which may result fatally from pulmonary collapse and cardiac failure. This complication can be avoided by intratracheal anesthesia administered with a positive pressure apparatus so that the intrapulmonary pressure can be controlled. As this type of anesthesia is equally satisfactory for the removal of the spinal portion of such tumors, it was utilized in this case.

In view of the fact that laminectomy is usually performed with the patient prone on the table and mediastinotomy preferably with the patient on one side or the other, the problem of posture was solved by placing the patient in an oblique position,

midway between the prone and the lateral position. The usual incision for laminectomy was made, and the spines and laminae of the fourth, fifth and sixth thoracic vertebrae were removed. This revealed a definite compression of the spinal cord by an extradural mass, which proved to be the intraspinal portion of the dumb-bell tumor. It had eroded the intervertebral foramina between the fifth and sixth vertebrae and was at least 2.5 cm. in diameter. The tumor was dissected until it was completely exposed and movable. At this stage in the procedure it was thought best to mobilize the intrathoracic portion, and for that reason the laminectomy wound was packed with warm saline gauze packs.

The thoracotomy was performed through a posterolateral incision parallel with and about 3 inches (7.5 cm.) from the spine and extending from the fourth to the seventh rib around the angle of the scapula. The posterior third of the fifth and sixth ribs was resected and the muscles in the fifth intercostal space were divided. This exposed the larger portion of the tumor, which presented in the posterior mediastinum, immediately beneath these ribs (fig. 2). The posterior portion of the tumor was separated from its fibrous attachment to the vertebrae and from the pleura and mediastinal structures posteriorly. The depth of the tumor anteriorly was such that it was impossible to separate its anterior attachments to the pleura. At this stage the packs were removed from the laminectomy wound, and the intraspinal portion of the tumor was transfixed with sutures of silk, the ends of which were passed into the mediastinal wound, allowing traction and rotation of the intraspinal portion of the tumor and its withdrawal into the mediastinal wound (fig. 3). This permitted the entire tumor to be elevated and withdrawn from the anterior mediastinum, so that the anterior attachments of the pleura could be separated from the tumor; separation was accomplished without rupturing the pleura or entering the pleural cavity. It was necessary to separate the tumor from its attachment to the aorta laterally under direct vision, this being done without any complication, and to separate the anterior attachment of the pleura without rupturing the pleura or causing undue bleeding, which could not have been accomplished had it not been possible to mobilize the tumor. A distinct advantage of this procedure was that we were able to remove the tumor extrapleurally under direct vision, avoiding injury to any of the mediastinal structures and particularly avoiding an open pneumothorax. This is a great advantage in an operation of this magnitude, as it eliminates the hazards of serious intrapleural complications. Another distinct advantage is the excellent exposure following the removal of the tumor, permitting complete control of hemorrhage simultaneously in the mediastinum and in the spinal canal. After the hemorrhage had been controlled, the laminectomy wound was again packed with saline sponges, and the mediastinal wound, which was closed in layers, was drained with two small Penrose drains to relieve any tension on the pleura that might result from exudation of serum. After the mediastinotomy wound had been closed, the laminectomy wound was closed in layers with interrupted catgut sutures, one Penrose drain being left in place for drainage, thus obviating pressure on the mediastinum and cord that might be transmitted through the intervertebral foramina.

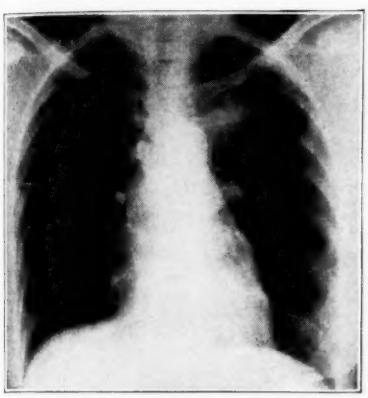


Fig. 1.—Shadow of tumor extending from the fifth to the seventh rib in the upper left part of the thorax adjacent to the spine and mediastinal structures.

Following operation, the patient was transferred immediately to the oxygen chamber, where she was kept for a period of ten days. The Penrose drain in the laminectomy wound was removed after twenty-four hours; one of the drains in the mediastinotomy wound was removed after forty-eight hours and the second after seventy-two hours. The patient's convalescence was entirely uneventful. Her highest temperature,

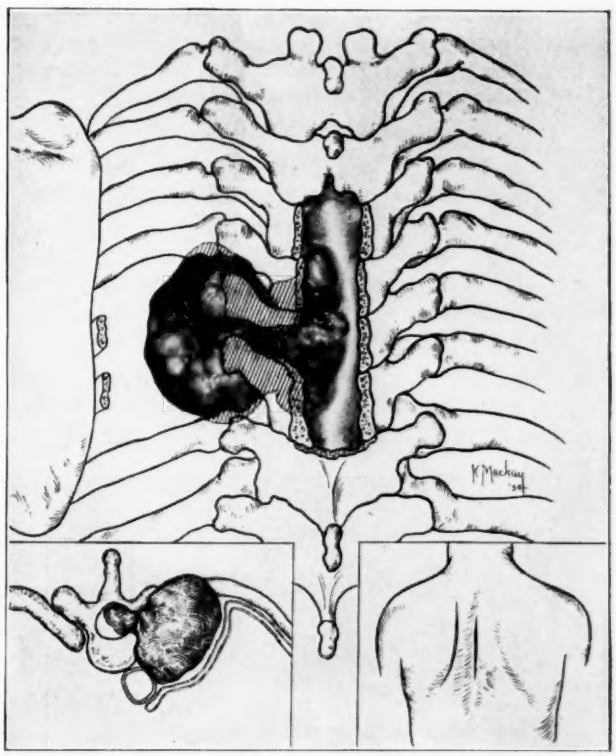


Fig. 2.—Drawing made at operation showing relation of the tumor to its contiguous bony structures. Inset at left demonstrates relation to aorta, spinal canal, and pleura; at right, incisions for a laminectomy and mediastinotomy.

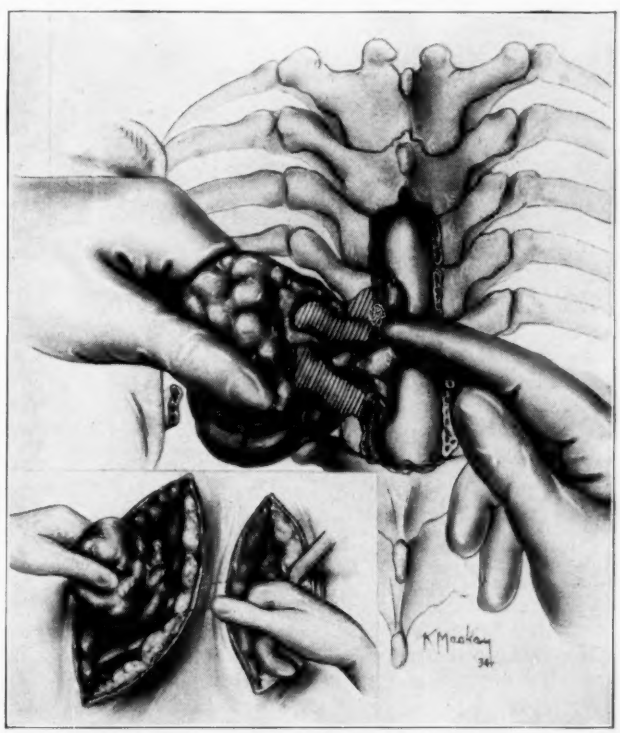


Fig. 3.—Drawing showing method of removal of tumor.

which was 100 F., was recorded on the second postoperative day; it dropped to normal on the third day and remained normal throughout the remainder of her convalescence. She had no respiratory embarrassment, nor did any pleural complications

develop. At no time during convalescence did she show any signs of compression of the cord. She was transferred to the general floor of the hospital on the eleventh day and was dismissed to her home on the twenty-fourth day after operation, at which time she was entirely free from her preoperative neurologic symptoms. A letter received four months after operation reported that her condition was excellent, that she had no subjective symptoms, and that the function of her arm was practically as good as before operation.

DIABETIC GANGRENE OF THE FACE AND EAR COMPLICATED BY FIFTH AND SEVENTH NERVE INVOLVEMENT

A. J. BRIER, M.D., TOPEKA, KAN.

This case is presented because (1) of the rarity of the occurrence of diabetic gangrene of the face and (2) because of the unique complications that occurred subsequent to the gangrenous process.

H. M., a man, aged 24, a farmer, brought to the hospital, Dec. 16, 1933, noticed a sore lump just in front of his right ear about thirty-six hours before. He was seen by his family

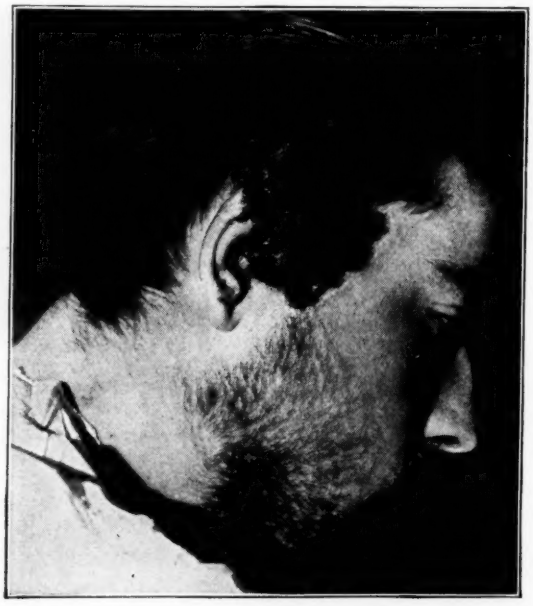


Fig. 1.—Gangrenous involvement after spread of process had ceased.

physician shortly after its appearance. Local application of heat was then advised. In spite of the treatment, the condition became worse. The surrounding tissue became red, hot and swollen. The pain increased. In a few hours he complained of being short of breath. Because of the rapid progress of the local symptoms and the oncoming dyspnea he was sent to the hospital. Shortly after his admission he became quite stuporous and complained of being unable to breathe on account of "gas in his stomach."

In 1927 e had influenza rather badly. From this he recovered slowly. Immediately after this illness he was told that he had sugar in the urine. On this occasion he was advised as to his diet. While his diet was watched he gained weight and strength. Although he resumed a part of his duties, he was never able to take full part of the work on the farm.

In the summer of 1932 he "began to fall off" again, when he complained of vague stomach distress, a "ravenous appetite" and an insatiable thirst. From this point on he became progressively worse. Nothing particularly was done about his condition. His diet was regulated little if at all. The family history has no bearing on his condition.

Examination at the time of admission revealed that he was poorly nourished and, though conscious, mentally sluggish. The breathing was rapid and moderately deep.

Just anterior to the right ear there was a small hardish area of a rather angry appearance. The skin surrounding this lesion was red and swollen over an irregular area extending about 1½ inches (38 mm.) in front of the ear anteriorly, above to the hair line and below to the angle of the jaw. This area was tender. No sensory or motor disturbances were present.

Fig. 2.—Anesthetic areas within line; also paralysis of face muscles.

The pupils were equal and active.

The tongue was dry and protruded in the midline. The teeth were in good condition.

No pathologic changes were noted in the neck.

Examination showed nothing unusual about the lungs and heart.

Fig. 3.—Outline of anesthetic areas, corneal changes, motor changes and ear destruction.

The abdomen was distended, particularly in the upper half, and tympanitic over its entire area. No masses or areas of tenderness were found.

On both hands were lacerations showing low grade infection. On both heels were darkish areas about 1½ inches in diameter.

Laboratory examination disclosed: hemoglobin (Salhi), 86 per cent; erythrocytes, 4,400,000; leukocytes, 8,900; polymor-

phonuclear neutrophils, 84 per cent; lymphocytes, 15 per cent; monocytes, 1 per cent.

The urine showed a two plus reaction for albumin and a strongly positive reaction for sugar, diacetic acid and acetone.

The blood sugar was 363 mg. per hundred cubic centimeters of blood. The carbon dioxide combining power by the Van Slyke method was 28.7 volumes per cent.

The blood Wassermann reaction two days later was negative, as was the Kahn reaction.

The patient was treated in a more or less recognized way, the acidosis being considered paramount. In four or five hours he was much more comfortable. On the following day he was much better and the blood sugar came down satisfactorily. This progress was not wholly constant for the next few days, but his progress was still satisfactory.

On about December 20 the involved skin in front of the ear showed definitely gangrenous changes. This was progressive. By December 26 or 27 one had the impression that the whole ear was involved and that the extension had gone deeply into the side of the face.

By about Jan. 5, 1934, seventh nerve changes were noted. Shortly after this the skin of the right side of the face became painful and swollen, and anesthesia of the skin of the face followed. Accompanying these changes, anesthesia of the right half of the tongue and the buccal mucous membrane was observed. The tongue on protrusion deviated to the right. At about the same time a burning and redness of the right eye was noted followed by total anesthesia of the conjunctiva.

The general condition of the patient improved and by January 30 the repair of the gangrene of the face and right ear had definitely become established. The heels had gone on to gangrene and were almost healed.

Throughout the course of the illness the patient had fever, which at times produced a temperature of from 103 to 104 F. This was relieved when some drainage from the face occurred. On one of these occasions of high fever a forceps was introduced deeply into the sinus that was just anterior to the ear, liberating a large amount of pus, followed by a marked reduction of the fever.

For the next three weeks the patient gradually improved, although for a great part of this time occasional elevations of temperature occurred but never reached the high marks previously noted. There was further improvement in the condition of the previously gangrenous area. The discharge from the sinus lessened but the eye changes became slowly worse and a corneal ulcer occurred.

On his seventy-fifth hospital day the patient was thought well enough to go home. He had been thoroughly instructed as to the preparation of his diet, the use of insulin and his general welfare. He was discharged to return for observation.

At home his progress was satisfactory. He gained weight and ultimately all lesions healed and he was able to do some light work.

From time to time he was seen and some improvement was noted, as manifest by the return of sensation over the proximal portion of the face. Motor function has never improved.

September 12 he returned, when the photographs were made from which the accompanying illustrations have been prepared. At this time he is doing full time work on the farm. He is strong and his nutrition is quite satisfactory.

September 21 the patient was seen, and the following notes were made: The tongue deviates slightly to the right and is asymmetrical. There is anesthesia of the right side of the tongue and mucous membrane of the cheek. The right arch of the soft palate is relaxed. The masseter muscle of the right side does not contract. The chin can be shifted to the right but not to the left. The gums of the right jaw are quite unhealthy compared to the normal side. Temperature changes cannot be told over the anesthetic area shown in the pictures.

The right eye cannot be closed or the eyebrow raised. The nasolabial fold is smooth. The angle of the mouth droops. The right half of the platysma does not contract.

The patient states that he does not sweat on the affected side, even under goggles worn to protect the right eye.

700 Kansas Avenue.

Special Article

THE EVALUATION OF SERODIAGNOSTIC TESTS FOR SYPHILIS IN THE UNITED STATES

H. S. CUMMING, M.D.
Surgeon General, U. S. Public Health Service; Chairman of Committee
H. H. HAZEN, M.D.
WASHINGTON, D. C.
ARTHUR H. SANFORD, M.D.
ROCHESTER, MINN.
FRANCIS E. SENEAR, M.D.
CHICAGO
WALTER M. SIMPSON, M.D.
DAYTON, OHIO
R. A. VONDERLEHR, M.D.
Passed Assistant Surgeon, U. S. Public Health Service
WASHINGTON, D. C.

The development of a method for the evaluation of serodiagnostic tests for syphilis in the United States has recently been completed by a committee whose membership consists of two clinical pathologists appointed by the American Society of Clinical Pathologists, two syphilologists, and two officers of the United States Public Health Service. It has been the primary aim of this committee to be guided as far as possible by the most frequently employed, most practical, but also the most reliable, practices. Each step in the evaluation plan has been carefully considered with the idea of duplicating the actual procedure that occurs when the physician in private practice collects his specimens of blood and forwards them to a serologic laboratory for examination. It is believed to be the peculiar responsibility of serologists interested in the diagnosis of syphilis to develop thoroughly practical tests. They should be efficient from a diagnostic standpoint and should possess such ready adaptability that even the collection and transportation of specimens under the most unfavorable conditions that might exist in actual practice will not interfere with their efficiency. Other factors of secondary importance are the adaptability of the test to use by other technicians, rapidity of performance, and, perhaps, the cost.

The plan that has finally been decided on consists of the collection of samples of blood from donors in various categories and the distribution of these samples from central points of collection to the laboratories of participating serologists. Serologists in this country who have described an original serologic test or a modification of such a test for the diagnosis of syphilis have been invited, and with one or two exceptions all have accepted. Those who have described more than one serologic test or modification have agreed to perform only one test in their laboratory. They may, however, delegate to another laboratory in a different city the performance of the second test. It is the purpose of this study, therefore, to appraise separately the various modifications of complement fixation methods and flocculation tests. The committee feels that only in this way will it be possible to measure fairly and impartially the efficiency of independent examinations, and to determine the most valuable combination of tests.

In the collection of the specimens, sufficient blood or spinal fluid will be taken to furnish ample and comparable samples to each participating serologist. The donors for these specimens will be carefully chosen and accurate records kept of the pertinent facts in the history and physical examination of all abnormal individuals. Reasonable care will also be exerted to insure that donors will be subsequently available for clinical examination several months later in the event that disparities exist in the laboratory reports of the participants. Specimens collected under aseptic conditions in standard glass tubes will be forwarded to the participating serologists either by regular first-class mail or by special delivery air mail. The mailing of specimens will be staggered, those to serologists in cities nearest the points of collection being delayed in order that all specimens may arrive at the laboratories of all of the serologists at approximately the same time. Reports will be submitted by the serologists at regular intervals, and these reports will be immediately compared with the clinical diagnoses of the donors. The final evaluation will take place after all the serologic examinations have been completed.

The following is a detailed description of the plan that will be followed in the study to evaluate serodiagnostic tests for syphilis in the United States.

I. SELECTION OF DONORS

1. A total of approximately 1,000 donors for blood specimens and 200 donors for spinal fluid specimens will be selected. Donors for blood specimens will be chosen from the following representative groups:

(*a*) Untreated early primary syphilis in the first four weeks of the disease.
(*b*) Untreated secondary syphilis with cutaneous eruptions.
(*c*) Late cases of syphilis with varying amounts of treatment.
(*d*) Normal, presumably nonsyphilitic individuals.
(*e*) Normal, presumably nonsyphilitic women, both during menstruation and in the interim between the monthly periods.
(*f*) Patients with leprosy.
(*g*) Patients with tuberculosis.
(*h*) Patients with malignant disease.
(*i*) Patients with acute febrile disease, particularly the exanthems.
(*j*) Patients with malaria.
(*k*) Patients with jaundice.
(*l*) A group of pregnant women.

The donors for spinal fluid specimens will be drawn from two classes—nonsyphilitic patients from hospitals and clinics for nervous and mental diseases in whom nonsyphilitic disease of the central nervous system may exist, and a group of neurosyphilitic patients from similar institutions.

2. Donors of blood specimens from the early primary syphilis group shall be of the male sex and have an untreated primary syphilitic infection in the chancre stage. They must have a darkfield positive initial lesion, which has been present for a period not greater than four weeks, and the blood specimen must be taken before the appearance of any secondary manifestations of syphilis.

3. Specimens will be collected from donors with acute febrile disease only when the oral temperature is 100 F. or higher.

II. COLLECTION OF SPECIMENS

1. All blood specimens will be drawn under aseptic conditions.

2. Blood specimens will be collected in dry sterile syringes, the blood being transferred immediately to thick-walled test tubes, without lip, which will hold at least 4 cc. of whole bood. Comparable samples will be sent to each serologist in these tubes, which will be closed by a sterile cork.

3. The specimen tubes will be cleaned before sterilization as follows:

(*a*) Rinsed thoroughly in cold water.
(*b*) Washed thoroughly in hot soap solution.
(*c*) Rinsed clear in hot water and then immersed for twenty minutes in a solution of potassium bichromate 120 Gm., concentrated sulphuric acid 600 cc., and water 800 cc.
(*d*) Washed free from acid in hot water.
(*e*) Ordinary wood corks will be washed well in soap and water and finally rinsed well in tap water.
(*f*) Both the glass tubes and the corks will be sterilized by autoclave or by baking. The corks will then be placed in the tubes under sterile precautions and given one baking at 180 C. for one hour.
(*g*) Each batch of specimen tubes prepared in the described manner will be tested for the presence of acid and to insure sterility.

4. Whole blood specimens will be sent to all participants unless several successive specimens sent to distant points are received in a hemolyzed condition.

5. All the participating serologists have agreed to perform only one test. Certain serologists who have devised two tests have designated a second laboratory in another city in which the second test will be performed.

6. Serologists performing precipitation tests will be furnished 3 cc. of whole blood; those performing complement fixation tests will be furnished 4 cc. of whole blood.

7. A maximum of 3 cc. of spinal fluid will be furnished to all participating serologists.

8. An attempt will be made to secure spinal fluid from individual patients in quantities totaling from 40 to 50 cc. This will make it possible to give every serologist a comparable sample from the same patient. In the event that it is impossible to obtain such a large quantity of spinal fluid from the entire 200 donors, specimens from several donors of known positive or negative spinal fluid will be pooled and subsequently divided into comparable samples. No dilution of spinal fluid specimens with saline solution or other foreign substances will be permitted.

III. PREPARATION OF SPECIMENS FOR SHIPMENT

1. The tubes containing specimens will be packed in double tin mailing containers, the outer to be made of tin with a screw top, lined with heavy cardboard approximately 0.25 cm. thick; the inner container to be made entirely of tin, to measure about 5 by 20 cm., and to hold twenty tubes with ample packing.

2. The name of the participating serologist will be typewritten or printed on the label, which will be pasted with ordinary commercial mucilage on the outer tin mailing container.

3. Mailing containers, holding specimens for serologists in nearby cities, the mailing of which is being purposely delayed in order to synchronize delivery time, will be kept at ordinary room temperature.

IV. TRANSPORTATION OF SPECIMENS

1. Specimens will be collected on all days of the week except Saturday and Sunday. It will be impossible to assure participating serologists that specimens will not reach them on Saturdays and Sundays. Participants may, however, arrange with their local postmasters for deliveries on Saturday and Sunday.

2. In order to obtain specimens of blood and spinal fluid from the rarer types of cases, it may be necessary to send one or two such specimens at random from time to time. As far as possible, however, separate days for spinal fluid and for blood specimens will be set aside.

3. Specimens to participating serologists most distant from the point of collection will be sent by special delivery air mail to insure delivery of all specimens within the shortest possible time.

4. All other specimens will be sent through the regular mail and the delivery time approximated by delaying the mailing of specimens to nearby cities.

5. Specimens will be collected and forwarded during the cold weather—December, January, February and perhaps March. No attempt will be made to prevent freezing of the specimens, but they will not be left exposed purposely to marked variations in temperature. The label on each mailing container will be marked "Perishable—Avoid Extreme Heat or Freezing."

B-663

EVALUATION OF SEROLOGIC PROCEDURES FOR THE DIAGNOSIS OF SYPHILIS
UNITED STATES PUBLIC HEALTH SERVICE COOPERATING WITH
THE AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS

SEROLOGIST'S REPORT

Name of SEROLOGIST_____ Name of TEST_____

Mail this report to the Division of Venereal Diseases,
United States Public Health Service, Washington.

Specimen number	Date received	Date performed	Results			Remarks
			Pos.	Doubt.	Neg.	

This is to certify that I have performed only the single test agreed upon on the specimens reported above.

_____
(Signature of Serologist)

74-808

Serologist's report.

V. REPORTING RESULTS

1. Reports of all tests will be submitted to the committee by the serologist on the accompanying form.

2. The results of all tests must be reported as "positive," "doubtful" or "negative." The participating serologist may use his own symbols to describe a positive, doubtful or negative test if his symbols are placed only in the designated columns on the accompanying form.

VI. EVALUATION OF RESULTS

1. The percentage of specificity of a given test will be estimated from the presumably nonsyphilitic patients and individuals. The following groups of blood donors will be used in the estimation of specificity:

(*a*) Normal, presumably nonsyphilitic individuals.
(*b*) Presumably nonsyphilitic persons with leprosy.
(*c*) Presumably nonsyphilitic persons with tuberculosis.
(*d*) Presumably nonsyphilitic patients with malignant growths.
(*e*) Presumably nonsyphilitic patients with acute febrile disease.
(*f*) Presumably nonsyphilitic patients with jaundice.
(*g*) Presumably nonsyphilitic patients with malaria.
(*h*) Presumably nonsyphilitic pregnant women.

Specificity of spinal fluid tests will be estimated from the group of spinal fluids of presumably nonsyphilitic patients.

The percentage of sensitivity will be estimated from the known syphilitic patients. The following groups of blood donors will be used in estimating sensitivity:

(*a*) Untreated early primary syphilis.
(*b*) Untreated secondary syphilis.
(*c*) Late syphilis previously under treatment.

The sensitivity of spinal fluid tests will be estimated from the group of spinal fluids of syphilitic patients.

General consideration will be given to other factors, such as ease and rapidity of performance, adaptability and cost, but these factors will not be considered in estimating the percentage rating.

2. The doubtful reports will be evaluated as a separate group on the basis of specificity and sensitivity.

3. Specimens so badly hemolyzed that the test cannot be performed should be reported as such by the serologist in the "remarks" column of the serologic record. Anticomplementary reactions should also be reported as such in the "remarks" column. Proper consideration will be given such reports in the ultimate evaluation.

4. One set of comparable specimens will be sent from the points of collection to a station of the Public Health Service in order to determine the condition of the specimen at the end of the journey. This lot will be used to estimate the frequency of accidents to the specimens.

Variation in Pneumatic Spaces in Petrous Bone.—There seems to be no reason why a given bone may not present any one of a number of anatomic variations. Thus, one petrous bone may have pneumatic spaces in the antrum region only; another may have spaces about the vestibule and canals as well, and a third may, in addition, have spaces in the petrous tip. The pneumatic spaces may vary in size from those that are small to those that give the petrosa a cellular appearance. It would seem obvious that there would be no one procedure capable of handling infections of all petrous bones. In some, drainage from antral cells would be sufficient. In others, drainage would have to be maintained forward to the internal auditory meatus along the posterior border of the petrous bone. In others, with fistulous tracts already established, drainage would need to be established for the cells extending to the petrous apex above or below, or both above and below, the labyrinth.—Hagens, E. W.: Anatomy and Pathology of the Petrous Bone, *Arch. Otolaryng.* **19**:556 (May) 1934.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SCILLONIN.—A mixture of two non-water soluble glucosides, scillonin-A and scillonin-B, derived from squill, in the proportions in which they exist in the drug; namely, about equal parts. The product is standardized so that the variation in the proportion of each glucoside is not more than plus or minus 2.5 per cent (from 50 per cent), i. e., 47.5 to 52.5 per cent. Scillonin dried in a high vacuum at 50 C. for five hours loses not more than 2 per cent of its weight.

Actions and Uses.—The cardiac action of scillonin is essentially similar to that of digitalis.

Dosage.—In cardiac decompensation, where digitalis has not been administered within one week, the average adult dose is 3 mg. (six tablets, or 3 cc., of scillonin solution) daily. The average maintenance dose is 0.5 mg. per day (one tablet, or 0.5 cc., of scillonin solution). In milder cardiac disorders, from 0.5 mg. to 1 mg. of scillonin per day (one to two tablets, or 0.5 to 1 cc., of scillonin solution) may be given.

Manufactured by the Grisard Laboratories, Inc., Winchester, Tenn. U. S. patent applied for. U. S. trademark 309,472.

Tablets Scillonin, 0.5 mg.

Solution Scillonin: Each cubic centimeter represents one milligram (1/60 grain) of scillonin, in a vehicle composed of equal volumes of glycerin and alcohol.

Scillonin occurs as a pale yellow, granular powder, possessing a slight characteristic odor and an extremely bitter taste; soluble in acetone, alcohol, ethyl acetate, glacial acetic acid, dilute alkali carbonate and hydroxide solutions, sparingly soluble in chloroform, practically insoluble in water, carbon tetrachloride, ether and purified petroleum benzine. A saturated aqueous solution is neutral to litmus. An alcoholic solution is levorotatory. Dissolve about 0.001 Gm. of scillonin in 2 cc. of acetic anhydride, followed by the addition of 0.1 cc. of sulphuric acid, agitate and cool: a rose color appears changing to violet then to green (*this color reaction is due to the mixture presumably of aglucones*). Dissolve about 0.2 Gm. of scillonin in 25 cc. of ethyl alcohol, add 1 cc. of sulphuric acid and heat the mixture under a reflux condenser on a steam-bath for six hours. The resinification of the presumably mixed aglucones separates in the form of yellowish brown oily droplets, which on cooling solidify into a brownish waxy mass; remove the hydrolytic residue by filtration: the filtrate contains nonhydrolyzed substances and a cleaved sugar. Boil about 2 cc. of the filtrate with 5 cc. of alkaline cupric tartrate solution: a reduction of the latter results. Dissolve about 0.1 Gm. of scillonin in 5 cc. of a 10 per cent solution of sodium hydroxide and add about 0.1 cc. of a 1 per cent solution of cupric sulphate: a violet color does not appear (*absence of soluble protein*). Dissolve about 0.01 Gm. of scillonin in 5 cc. of ethyl alcohol and add 0.1 cc. of a 5 per cent solution of ferric chloride: a greenish yellow color results (*absence of tannins*). Dissolve about 0.1 Gm. of scillonin in 5 cc. of a 10 per cent solution of sodium hydroxide solution and add 10 cc. of boiling alkaline cupric tartrate solution: no reduction of latter appears immediately (*absence of free reducing sugars*).

Ignite about 0.1 Gm. of scillonin, accurately weighed: the residue does not exceed 0.25 per cent. Dry about 0.2 Gm. of scillonin, accurately weighed, over sulphuric acid in a partially exhausted desiccator for forty-eight hours at 20 C.: the loss in weight does not exceed 4 per cent. Dissolve about 0.5 Gm. of scillonin, accurately weighed, in 25 cc. of 95 per cent ethyl alcohol; observe the angular rotation at 20 C.: the specific rotatory power [α] 20/D falls between —18.0 and —21.5. Transfer about 0.5 Gm. of scillonin, accurately weighed, previously dried over sulphuric acid in a partial vacuum, to a suitable Erlenmeyer flask, dissolve in 7 cc. of alcohol, followed by the addition of 7 cc. of a mixture of 1 cc. of sulphuric acid and 25 cc. of water; connect with condenser and "reflux" on a steam-bath for six hours; disconnect the condenser; neutralize the mixture with normal sodium hydroxide solution using phenolphthalein as an indicator; add 0.1 cc. of sulphuric acid; remove the alcohol by heating on the steam-bath until reduced to about a 10 cc. volume; add 10 cc. of water, mix thoroughly and evaporate to about 10 cc.; cool and collect the separated crystalline and dark waxy resinous residue on a filter paper, wash the residue with water using three portions of 10 cc. each; dissolve the residue in warm alcohol by passing it through the filter and collecting in a tared beaker; evaporate to a pilular consistency on the steam-bath and dry for three hours at 90 C.: the amount of hydrolytic residue found is not less than 70 per cent nor more than 75 per cent.

SUPPLEE B. ACIDOPHILUS MILK.—A whole milk cultured with Bacillus acidophilus. It contains not less than 200 million viable B. acidophilus organisms at the date of manufacture and not less than 100 million at the expiration date.

Actions and Uses.—See general article, Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, 1934, p. 250.

Dosage.—For adults 1,000 cc. per day, increased or decreased to meet individual requirements. When employed in infant feeding, it may be diluted with boiled water. Supplee B. acidophilus milk must be kept in a cool place and should be used prior to the expiration date stamped on the label.

Manufactured by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y. (Supplee-Wills-Jones Milk Co., Philadelphia, Pa., distributor). No U. S. patent or trademark.

Fresh whole cow's milk with a butter fat content of not less than 3 per cent is sterilized at 100 C. for two hours. After cooling to 37 C. the milk is inoculated with a twenty hour seed culture of pure strains of Bacillus acidophilus. After inoculation the milk is kept at 37 C. for from twenty to twenty-four hours until an acidity is reached such that 10 cc. will require for neutralization 8 cc. of tenth-normal sodium hydroxide solution, phenolphthalein being used as indicator. The product is then cooled, agitated until homogeneous and transferred to one-half pint, pint and quart bottles. The strains of Bacillus acidophilus used are isolated by Cheplin. To insure a high degree of activity and colonization within the human alimentary tract, the organism is freshly isolated from human intestinal contents as frequently as is found necessary through actual feeding experiments.

SODIUM MORRHUATE (See New and Nonofficial Remedies, 1934, p. 417).

The following dosage forms have been accepted:

Sodium Morrhuate 5% Solution with Benzyl Alcohol (Ulmer) 5 cc. Vials: Each cubic centimeter contains sodium morrhuate-N. N. R. 0.05 Gm., benzyl alcohol 0.03 Gm., and phenol 0.005 Gm., in aqueous solution.

Prepared by the Ulmer Pharmacal Co., Minneapolis. No U. S. patent or trademark.

Sodium Morrhuate 5% Solution with Benzyl Alcohol (Ulmer) 20 cc. Vials: Each cubic centimeter contains sodium morrhuate-N. N. R. 0.05 Gm., benzyl alcohol 0.03 Gm., and phenol 0.005 Gm., in aqueous solution.

Prepared by the Ulmer Pharmacal Co., Minneapolis. No U. S. patent or trademark.

DILAUDID (See THE JOURNAL, June 16, 1934, p. 2024).

The following dosage form has also been accepted:

Dilaudid Rectal Suppositories 1/24 grain: Each contains dilaudid 0.0026 Gm. (1/24 grain) in a cacao butter base.

PHENOBARBITAL SODIUM (See New and Nonofficial Remedies, 1934, p. 100).

Phenobarbital Sodium-Mallinckrodt.—A brand of phenobarbital sodium-N. N. R.

Manufactured by the Mallinckrodt Chemical Works, St. Louis. No U. S. patent or trademark.

GYNERGEN (See New and Nonofficial Remedies, 1934, p. 202).

The following dosage form has been accepted:

Ampules Gynergen Solution 1:2000, 0.5 cc.: Each ampule contains 0.25 mg. of gynergen in an aqueous solution containing a small excess of tartaric acid.

PROCAINE BORATE-SEARLE (See New and Nonofficial Remedies, 1934, p. 59).

The following dosage form has been accepted:

Tablets Procaine Borate and Epinephrine: Each tablet contains procaine borate-Searle 0.05 Gm. (3/4 grain) and epinephrine 0.0001 Gm. (1/640 grain).

HOLOCAINE (See New and Nonofficial Remedies, 1934, p. 59).

The following dosage form has been accepted:

Holocaine Solution, 1 per cent: An aqueous solution containing holocaine, 1 per cent., for ocular anesthesia by instillation. The product is not to be used for injection.

RABIES VACCINE (See New and Nonofficial Remedies, 1934, p. 378).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Rabies Vaccine (Phenol Killed)-Mulford (See New and Nonofficial Remedies, 1934, p. 380): also marketed in packages of seven vials, each vial (one dose) containing 0.5 cc. of a 25 per cent suspension of brain tissue.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1934, p. 60).

Procaine Hydrochloride-Squibb.—A brand of procaine hydrochloride-U. S. P.

Manufactured by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 50 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 100 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 120 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 150 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 200 mg.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

1. BOWEY'S DARI-RICH SYRUP
2. BOWEY'S DARI-RICH POWDER
3. BOWEY'S PASTEURIZED DARI-RICH CHOCOLATE FLAVORED SWEETENED, PARTIALLY DEFATTED MILK

Bowey's, Inc., Chicago, submitted to the Committee on Foods (1) a syrup prepared from sucrose, water, cocoa, vanilla extract and a trace of agar called Bowey's Dari-Rich Syrup; (2) a powdered mix prepared from sucrose, cocoa, water, vanilla extract and agar (U. S. P.) called Bowey's Dari-Rich Powder, and (3) a pasteurized, chocolate flavored, sweetened, partially defatted milk, called Bowey's Pasteurized Dari-Rich Chocolate Flavored Sweetened, Partially Defatted Milk, prepared by (*a*) mixing partially defatted pasteurized milk (2 per cent milk fat) with "Bowey's Dari-Rich Syrup" or (*b*) mixing partially defatted milk (2 per cent milk fat) with sugar and "Bowey's Dari-Rich Powder."

Discussion of Name.—The name "Dari-Rich" applied to the syrup and powder phonetically implies that the products are rich in milk, whereas they contain no milk; applied to the mixture of syrup or powder and skim milk, it incorrectly suggests that the liquid ingredient is whole milk. Since a food containing whole milk has broader nutritional value than one prepared from skim milk, whole milk and skim milk foods should be carefully distinguished by name and advertising in order that the purchaser may not be misinformed.

The manufacturer was informed of the judgment of the Committee but has declined to alter the name for business reasons. These products will therefore not be listed among the accepted foods of the Committee.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG, Secretary.

BERKSHIRE BRAND EVAPORATED MILK

Distributor.—Reading Wholesale Grocery Company, Reading, Pa.

Packer.—The Page Milk Company, Merrill, Wis.

Description.—Canned unsweetened sterilized evaporated milk, the same as Page Brand Evaporated Milk (Sterilized, Unsweetened), (THE JOURNAL, May 30, 1931, p. 1872).

GOOD MORNING PURE FLORIDA GRAPEFRUIT JUICE
GOOD MORNING PURE FLORIDA ORANGE JUICE

Distributor.—Chas. W. Bauermeister Company, Terre Haute, Ind.

Packer.—Dr. P. Phillips Company, Orlando, Fla.

Description.—Canned Florida grapefruit and orange juices sweetened with added sucrose and retaining in large measure the original natural vitamin content; the same as Dr. P. Phillips Pure Florida Grapefruit Juice (THE JOURNAL, Jan 7, 1933, p. 43) and Dr. P. Phillips Pure Florida Orange Juice (THE JOURNAL, Dec. 3, 1932, p. 1948).

MELLOW MILK—HOMOGENIZED, PASTEURIZED

Distributor.—Wayne Creamery, Detroit.

Description.—Bottled, pasteurized, homogenized milk.

Preparation.—Milk obtained from farms licensed by the Detroit Department of Health and under the supervision of the state of Michigan is delivered cold (4 C.) to the creamery, where it is pasteurized (held at 61 C. for thirty minutes), homogenized and filled in bottles by the usual procedure (THE JOURNAL, Sept. 1, 1934, p. 681).

Analysis.—Standardized to contain not less than 3.5 per cent of milk fat.

Calories.—0.7 per gram; 20 per ounce.

Claims of Distributor.—The cream does not separate. The curd formed in the stomach is softer than that from unhomogenized milk.

KENNETT MUSHROOMS
BROTH—SLICED STEMS AND PIECES—FANCY BUTTONS—SLICED BUTTONS

Manufacturer.—Kennett Square Mushroom Company, Inc., Kennett Square, Pa., subsidiary of Edward H. Jacob, Inc., West Chester, Pa.

Description.—Hothouse mushrooms; respectively broth, sliced stems and pieces, buttons, and sliced buttons; the same as Jacob Mushrooms — Broth — Fancy Buttons — Sliced — Sliced Stems and Pieces (THE JOURNAL, Sept. 15, 1934, p. 838).

IRRADIATED VITAMIN D PASTEURIZED MILK

Distributors.—

Beatrice Creamery Company, Tulsa, Okla.
Biltmore Dairy Farms, Biltmore, N. C.
Carrigan's Niagara Dairy Company, Niagara Falls, N. Y. (Golden Guernsey and Regular).
Clover Creamery Co., Inc., Roanoke, Va.
Gardner Creamery, Gardner, Mass.
Garst Bros. Dairy, Inc., Roanoke, Va.
Hunding Dairy Company, Chicago.
International Dairy Company, Chicago.
Kitsap Dairy, Bremerton, Wash.
Laurel Hill Creamery, Gardner, Mass.
Medosweet Dairies, Inc., Tacoma, Wash.
Merriman Dairy, Waterbury, Conn. (Fernwood).
Onondaga Milk Producers, Syracuse, N. Y. (Dairylea).
Roanoke Dairy & Ice Cream Co., Inc., Roanoke, Va.
Rosedale Dairy, Norfolk, Va.
Sanitary Farm Dairies, Inc., Houston, Texas.
Sheboygan Dairy Products Co., Sheboygan, Wis.
J. H. Story & Son Dairy, New Haven, Conn.
W. Weckerle & Sons, Inc., Buffalo.
Whiting Milk Companies, Boston and Worcester, Mass.

Description.—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays.

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation see THE JOURNAL, Oct. 7, 1933, page 1155.

Vitamins.—Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used. Contains 135 U. S. P. X (Revised, 1934) vitamin D units per quart.

Claims of Distributors.—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

THAMES VALLEY TOMATO JUICE

Distributor.—The Yantic Grain & Products Co., Norwich, Conn.

Packer.—Vincennes Packing Corporation, Vincennes, Ind.

Description.—Pasteurized tomato juice with added salt; retains in high degree the natural vitamin content; the same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, DECEMBER 1, 1934

THE ATLANTIC CITY SESSION

The Atlantic City session of the American Medical Association (June 10-14, 1935) will be notable in many ways and unique in one particular: The Canadian Medical Association has accepted an invitation to meet with the American Medical Association on this occasion. At a joint conference of Canadian officials with the Council on Scientific Assembly recently held in Chicago, preliminary plans were developed. The general council of the Canadian Medical Association is to hold its meetings simultaneously with those of the House of Delegates of the American Medical Association. The Canadian medical profession has many economic, social and political problems of interest, which parallel considerations now being given to these topics by our own legislative bodies.

Social functions will be participated in by both organizations. The Canadian medical profession will have a prominent part in the programs of all the scientific sessions, and a duplicate set of officers will alternate in presiding over these meetings. At the opening general meeting the presidents of both organizations will read their annual addresses. Thus the speakers on this occasion, besides the usual officers of state and local organizations, will be Dr. James S. McLester for the American Medical Association, and Dr. Jonathan C. Meakins for the Canadian Medical Association. Many Canadians will take part also in the Scientific Exhibit. Special sections are being arranged on military medicine and the history of medicine and anesthesia, and all the usual sections of the American Medical Association will have their regular programs.

Because of the unusual character of this meeting, it is anticipated that the number of distinguished guests from abroad will also be larger than usual. The success of the general scientific meetings, which take place on Monday and Tuesday before the opening of the section meetings, has led to the selection of many special lecturers for the Atlantic City session, who will have from forty minutes to an hour for complete presentation of knowledge regarding various medical and surgical subjects. These general scientific meetings are of the same scope as the clinical conferences held in various parts of the country under local auspices. The selection of the speakers and of the topics for these meetings lies with the Council on Scientific Assembly.

The last annual session of the Association, in Cleveland, was noteworthy for an extraordinary attendance, for the completeness of its scientific exhibit, and for the manner in which the programs of the sections covered a vast range of subjects in every medical specialty. With the participation by the Canadians, it is anticipated that the meeting in Atlantic City will be similarly broad and will at the same time present a new aspect afforded by the points of view of our Canadian visitors. It is quite a few years since the Association last met in Atlantic City. The Auditorium, built as a municipal project, offers the greatest convenience for such a meeting. All the sections and the Scientific and Technical Exhibits will be accommodated under one roof. The golf courses, the bathing and other vacation features of Atlantic City provide opportunity for relaxation and recreation as well as scientific pabulum. The accessibility to most of the large cities and to various sections of our country insures an attendance rivaling that of some of the greatest meetings ever held by the Association in other parts of the country. It is time now to begin to plan for attendance at the Atlantic City session and for what is sure to be an epoch-making event in the history of American medicine.

BISMUTH SUBNITRATE IN HYPERTENSION

Therapeutic research based on clinical observation presents the same inherent difficulties as do other forms of clinical investigation—the problem of adequate control. Probably the individual physical and mental variations of patients as well as the almost unavoidable bias of the physician interfere with such control. These factors can be minimized, however, by a critical attitude on the part of the recorder and the employment of enough patients to counterbalance largely the error due to individual variation.

Arterial hypertension offers a good example of both favorable and unfavorable factors influencing this type of study. The frequency of the condition allows the ready accumulation of data. This favorable factor is more than counterbalanced by the uncertainties of etiology,[1] varying form and degree of the hypertension, and especially by the frequent natural changes in blood pressure and symptomatology occurring in one individual from time to time. Finally, hypertension must be considered as a symptom rather than a disease per se and hence the effect of treatment on this symptom cannot necessarily be assumed to constitute a favorable treatment of the patient.

The use of bismuth subnitrate in the treatment of arterial hypertension is based primarily on the studies

1. de Wesselow, O. L. V.: Arterial Hypertension, Lancet **2**:579 (Sept. 15), 636 (Sept. 22), 687 (Sept. 29) 1934.

of Stieglitz.[2] It is founded on the conception of arterial hypertension as an arteriolar irritation of different probable etiologies, which is at least partially perpetuated by long continued fatigue of the arteriolar musculature. Eradication of the initiating factors, therefore, even when possible, is not always sufficient. It becomes rational, then, to attempt the relief of fatigue of the arteriolar musculature. It is in fulfilling this purpose, Stieglitz believes, that bismuth subnitrate aids in permitting the vitally necessary and prolonged physiologic rest of the injured structures—the medial musculature of the smaller arteries and arterioles. The mode of action of bismuth subnitrate is, he believes, the slow but continuous liberation of nitrate ions in the bowel, which permits continuous absorption of minute quantities of nitrite, since the nitrate is reduced to nitrite by the action of Bacillus coli.

At first glance this course of reasoning appears wholly logical. Several factors difficult of complete proof are involved. The curative effect of giving the arteriolar musculature transient artificial rest is speculative. Even more doubtful is the adequacy of such rest when produced by the theoretical absorption of minute quantities of nitrites supposedly derived from the ingestion of bismuth subnitrate. In the absence of immediate prospects of solving these involved questions the general use of this method of therapeutics should depend on the actual clinical results, since it seems unwise to discard clinically advantageous procedures of treatment because the exact mode of action is not thoroughly understood.

As a result of his studies on patients with the spastic type of arteriolar hypertension, Stieglitz evidently believes that the clinical results corroborate the theoretically good therapeutic action of bismuth subnitrate. Ayman [3] was unable to duplicate these effects on fifteen carefully controlled patients. Recently Bruen [4] also has criticized the conclusions of Stieglitz on the ground of insufficient control periods. He feels that a standardized procedure for determining the blood pressure, uniform frequency of visits during control and experimental periods, and the effect of nonspecific therapy can be provided for, which leaves only two variables apart from the long term trend; viz., adventitious influences and therapeutic actions. The effects of the latter may be readily distinguished by alternating control periods under nonspecific medication not sensibly different from the experimental medication with experimental periods under experimental medication. Thus, any alteration in the blood pressure that occurs during a period of experimental medication may be referred either to adventitious factors or to the medication, depending on its continuance or cessation on the resumption of nonspecific medication. This procedure, according to Bruen, makes possible the prosecution of rigorously controlled experimentation on the effects of therapeutic agents in arterial hypertension.

Patients newly assigned or carried under the diagnosis of hypertension, unselected except with regard to their maintenance of cardiac compensation and regular sinus rhythm, were entered into his experimental series as they became available. All who proved amenable to the experimental routine based on the control factors previously outlined were retained except those who registered diastolic pressures regularly below 90 or who were eliminated through the development of heart failure or prolonged intercurrent illness. The final series consisted of twenty persons, ranging in age from 27 to 73 with a median of 51 years. In all these, bismuth subnitrate was without demonstrable effect on the blood pressure. The symptoms of dyspnea, palpitaton, cardiac pain, dizziness and headache also pursued an independent course without reference to the administration or withdrawal of bismuth subnitrate. He therefore concludes that bismuth subnitrate by mouth, even in the largest therapeutically practicable dosage, does not develop sufficient nitrite action to exert any demonstrable effect on the blood pressure or symptoms of arterial hypertension.

2. Stieglitz, E. J.: Therapeutic Results with Bismuth Subnitrate in Hypertensive Arterial Disease, J. Pharmacol. & Exper. Therap. **46**: 343 (Nov.) 1932.

3. Ayman, David: Bismuth Subnitrate in the Treatment of Arteriolar (Essential) Hypertension, J. A. M. A. **98**: 545 (Feb. 13) 1932.

4. Bruen, C.: The Therapeutic Efficacy of Bismuth Subnitrate in Arterial Hypertension, Am. J. M. Sc. **188**: 21 (July) 1934.

PALILALIA AND GERTRUDE STEIN

The current vogue of a play called "Four Saints in Three Acts" and current interest in the writings of Gertrude Stein have been an interesting phenomenon for observation by the psychiatrists. Those familiar with such symptoms as automatic writing, palilalia, perseveration and verbigeration are inclined to wonder whether or not the literary abnormalities in which she indulges represent correlated distortions of the intellect, or whether the entire performance is in the nature of a hoax, and that Miss Stein produces her literary effusions with her tongue in her cheek. Palilalia is a form of speech disorder in which the patient repeats many times a word, a phrase or a sentence which he has just spoken. In addition, the speech tends to be uttered more and more quickly and less distinctly. For example, one patient described by MacDonald Critchley [1] was with his wife at a motion picture theater when he found himself reading aloud the captions of the films over and over again. (It has been alleged that there are many people suffering with this manifestation.) His wife, becoming annoyed, jabbed him in the ribs and said "For God's sake, Bob, shut up." But all the patient could reply was "I can't shut up. I can't shut up. I can't shut up," until eventually he did shut up because his speech became inaudible. In this case the patient was suffering from the results of an attack of epidemic encephalitis in which parkinson-

1. Critchley, MacDonald: On Palilalia, J. Neurol. & Psychopath. **8**: 23 (July) 1927.

ism gradually supervened. Of late, palilalia has been repeatedly mentioned as a sequela of epidemic encephalitis.

An analogous condition is palilogia, a term sometimes applied to that form of rhetoric whereby the word or sentence is deliberately repeated for purposes of emphasis. Then there is also verbal perseveration, with the same word or phrase repeated as though the original idea persisted for an undue length of time in the patient's mind to the exclusion of fresh incoming ideas. Sometimes there is echolalia, in which the patient repeats the statements or questions that have been put to him. Finally there is verbigeration, a frequent symptom in dementia praecox, in which the patient repeats the same sentence over and over again.

Now it is interesting in surveying the writings of Gertrude Stein to find that Miss Stein worked at Radcliffe with Münsterberg and that she wrote a paper, later printed in the *Harvard Psychological Review* for September 1896, under the title "Normal Motor Automatism," by Leon M. Solomons and Gertrude Stein. In their experiments, Mr. Solomons and Miss Stein attempted to investigate the limits of their own normal automatism, undertaking to see how far they could split their own personalities in a deliberate and purely artificial way. They were successful, according to B. F. Skinner,[2] to the extent of being able to perform many acts, such as writing or reading aloud, in an automatic manner while carrying on at the same time some other activity. Miss Stein reported that spontaneous automatic writing became easy after a little practice. Thus she said:

> A phrase would seem to get into the head and keep repeating itself at every opportunity, and hang over from day to day even. The stuff written was grammatical, and the words and phrases fitted together all right, but there was not much connected thought. The unconsciousness was broken into every six or seven words by flashes of consciousness, so that one cannot be sure but what the slight element of connected thought which occasionally appeared was due to these flashes of consciousness. But the ability to write stuff that sounds all right, without consciousness, was fairly well demonstrated by the experiments.

Obviously, therefore, the writing of Miss Gertrude Stein, such as appears in her plays, books and poems, is quite the same as she developed when experimenting with spontaneous automatic writing. For those who are unfamiliar with the writing of Miss Stein, we mention the following examples from the book called "Tender Buttons":

> When he could not be the longest and thus to be, and thus to be, the strongest.
>
> This long time when he did this best time, and he could thus have been bound, and in this long time, when he could be this to first use of this long time . . .
>
> A meal in mutton mutton why is lamb cheaper, it is cheaper because so little is more.

Mr. Skinner points out that the ordinary reader cannot infer from this writing that the author possesses any consistent point of view, because there is seldom, if any, intelligent expression of opinion. Her writing seems to be the result of a stream of consciousness of a woman without a past. The stream of consciousness is, of course, particularly well exemplified in some of the writings of James Joyce in Ulysses. Mr. Skinner is convinced that this spontaneous automatic writing by Miss Stein is that of a second personality successfully split off from her conscious self, and unfortunately a personality without any background, intellectual opinions or emotions. The mere fact that Miss Stein herself occasionally appears in the midst of the writings of this second personality would seem to be the proof of the opinion.

2. Skinner, B. F.: Has Gertrude Stein a Secret? Atlantic Monthly **153**: 50 (Jan.) 1934.

Current Comment

PERNICIOUS ANEMIA: NATURE AND THERAPY

Recently Adams has summarized[1] for the British Ministry of Health recent advances in our knowledge of pernicious anemia. In his discussion of the investigations on etiology he cites the hypothesis, partially confirmed, that the liver stores an antianemic factor (the "liver active principle"), which is produced in the stomach as a result of enzyme action between hematopoietin (the "stomach active principle") and an unknown constituent of normal diet. It appears, moreover, that the active principle of gastric tissue is more unstable than that of liver. That of gastric tissue is destroyed by temperatures greater than 45 C., by autolysis and by prolonged digestion with pepsin or trypsin. Another difference between the two principles is that, whereas the active principle of liver is always found in the filtrate after removal of the proteins, in gastric juice a protein fraction can be obtained which holds the whole of hematopoietic activity. The fact that the two principles are not identical is a point of practical importance. A considerable portion of Adams's review concerns the potency and relative cost of different preparations used in the treatment of pernicious anemia. "At present," he states, "there is only one reliable test which can be applied to ascertain the potency of a preparation intended for use in the treatment of pernicious anemia and that is the clinical one." Hence the value assigned to whole liver, liver extracts by oral and parenteral administration, gastric tissue preparations and combinations of these must be based wholly on the assessment of clinical response. There are some advantages and disadvantages of each and some indications for one or the other. He incorporates most of these facts in a table at the end of the report. The spread in cost to the patient of the different preparations is particularly striking. This spread depends primarily on the widely varying activity of the preparations. This fact probably lacks the full appreciation of most physicians but should receive considerable study, since the results of therapy as well as the cost are at stake.

1. Adams, E. W.: Recent Researches on the Nature and Therapy of Pernicious Anemia, British Ministry of Health, Public Health Reports No. 75, His Majesty's Stationery Office, 1934, Price 6 d.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

December 6. Keep Fighting Diphtheria, W. W. Bauer, M.D.
December 13. Shopping for Health, W. W. Bauer, M.D.
December 20. Social Security, Morris Fishbein, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

December 4. The Quick Lunch, W. W. Bauer, M.D.
December 11. Care of the Handicapped, Morris Fishbein, M.D.
December 18. Fight Tuberculosis With Modern Weapons, W. W. Bauer, M.D.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND MEDICAL LICENSURE

Tentative Program

The Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, Feb. 18 and 19, 1935. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 18, 10 A. M.

Report of the Council on Medical Education and Hospitals
Ray Lyman Wilbur, M.D., Chairman, Stanford University, Calif.
Should the Number of Professional Students Be Restricted?
Raymond Walters, Litt.D., President, University of Cincinnati.
The History of Medical Licensure
Henry E. Sigerist, M.D., Director, Institute of the History of Medicine, Johns Hopkins University, Baltimore.
Larger Social Aspects of Medical Education
Richard E. Scammon, Ph.D., Dean of Medical Sciences, University of Minnesota Medical School, Minneapolis.

MONDAY, FEBRUARY 18, 2 P. M.

Objectives of the Campaign Against Tuberculosis
Kendall Emerson, M.D., Managing Director, National Tuberculosis Association, New York.
Education of Physicians in Tuberculosis
James Alexander Miller, M.D., Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York.
Some Historical Aspects of Tuberculosis
Lawrason Brown, M.D., Trudeau School of Tuberculosis, Saranac Lake, N. Y.
Function of the General Hospital in the Treatment of Tuberculosis
J. A. Myers, M.D., Professor of Medicine, Preventive Medicine and Public Health, University of Minnesota, Minneapolis.

TUESDAY, FEBRUARY 19, 9 A. M.

JOINT SESSION OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS AND THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

Symposium: Should the Practice of Radiology, Pathology and the Administration of Anesthetics Be Limited to Those Who Are Licensed to Practice Medicine?
Legal Aspects
William C. Woodward, M.D., Director, Bureau of Legal Medicine and Legislation, American Medical Association, Chicago.
The Point of View of the Radiologist
B. R. Kirklin, M.D., Mayo Clinic, Rochester, Minn.
The Point of View of the Pathologist
J. P. Simonds, M.D., Professor of Pathology, Northwestern University Medical School, Chicago.
The Point of View of the Anesthetist
F. H. McMechan, M.D., Secretary General, International Anesthesia Research Society, Rocky River, Ohio.
The Point of View of the Surgeon
Karl A. Meyer, M.D., Medical Superintendent, Cook County Hospital, Chicago.
The Point of View of the Internist
James S. McLester, M.D., President-Elect, American Medical Association, Birmingham, Ala.
The Point of View of the Hospital Administrator.
Arthur C. Bachmeyer, M.D., Superintendent, Cincinnati General Hospital.
Administrative Aspects
A. T. McCormack, M.D., Secretary, Kentucky State Board of Health, Louisville.
The Point of View of the Licensing Board
Walter L. Bierring, M.D., President, American Medical Association, Des Moines, Iowa.
Are Interns Practicing Medicine?
Harold Rypins, M.D., Secretary, New York Board of Medical Examiners, Albany.

TUESDAY, FEBRUARY 19, 2 P. M.

Osteopathy and Licensure
Frederick Etherington, M.D., Dean, Queen's University Faculty of Medicine, Kingston, Ont.
Post-Graduate Medical Teaching
Charles Gordon Heyd, M.D., Professor of Clinical Surgery, New York Post-Graduate Medical School, New York.
Daniel J. Glomset, M.D., Des Moines, Iowa.
Uniform Standards in Licensing Examinations
Charles B. Pinkham, M.D., Secretary, California Board of Medical Examiners, Sacramento.

The Annual Dinner of The Federation of State Medical Boards of the United States will be held at the Palmer House, Chicago, on Monday, February 18, at 6:30 p. m., at which an address will be delivered by Dr. Henry E. Sigerist of Baltimore.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Stanley R. Parkinson, Marysville, has succeeded Dr. James H. Barr as health officer of Yuba County. ——Dr. Denver D. Roos has been named health officer of Corona, following the retirement of Dr. William S. Davis.

Cult Initiatives Defeated.—Newspapers, November 8, reported that the chiropractic initiative in California was defeated almost two to one in voting returns. A signal defeat was also indicated for the naturopathic initiative. Incomplete returns appearing in these reports showed the following figures: For the chiropractic initiative, 340,921 were in favor while 589,360 were against it, and for the naturopathic initiative, 183,809 voted for it and 307,459 against it.

Society News.—Speakers before the Los Angeles Surgical Society, November 16, included Drs. Crayton C. Snyder on "Pulmonary Abscess with Pneumothorax Complicating Partial Gastric Resection for Carcinoma of the Stomach"; Harry T. Upshaw, "Ileus Following Trauma," and John H. Breyer, "Pancreatic Injuries." All are from Pasadena.——Dr. Burrell O. Raulston spoke before the Hollywood Academy of Medicine, November 15, on "Present-Day Medical Education."——Dr. Robert R. Newell, San Francisco, addressed the San Diego Academy of Medicine, November 23, on "Recent Advances in Methods of Roentgen Diagnosis."——Dr. William L. Weber, Los Angeles, addressed the San Diego County Medical Society, November 13, on medicolegal testimony.——Dr. Clarence G. Toland addressed the Los Angeles County Medical Association, November 1, on "The Status of Medicine."

COLORADO

University News.—Dr. Oscar M. Gilbert, associate professor of medicine, University of Colorado School of Medicine, was made emeritus professor of medicine, following his recent resignation as associate professor. He has been connected with the school since 1900. Dr. Thomas D. Cunningham has resigned as assistant professor of medicine.——Dr. Philip Hillkowitz, Denver, has been appointed associate professor of chemistry at the University of Denver and will have charge of a newly established course in medical technology, *Science* reports.

DISTRICT OF COLUMBIA

Course in Otorhinolaryngology.—Prof. Georges Portmann, professor of otorhinolaryngology, University of Bordeaux Faculty of Medicine, will conduct a course in otorhinolaryngology in Washington, January 31-February 6. Further information may be had from Dr. James A. Flynn, 1151 Rhode Island Avenue, N.W., Washington, who is in charge of arrangements.

Society News.—At a meeting of the Washington chapter of the Pan American Medical Association, October 28, the speakers were Col. Fielding H. Garrison, Baltimore, on Spanish medicine; Dr. Fred H. Albee, New York, bacteriophage in the treatment of bone and joint infections, and Dr. Robert Gutierrez, New York, horseshoe kidney. A one minute period of silence opened the meeting in commemoration of the late Dr. Santiago Ramón y Cajal of Madrid.

GEORGIA

Science Lecture Series.—The University of Georgia Science Club is sponsoring a series of lectures to demonstrate the usefulness of laboratory work in industry and the professions, including medicine and public health. Dr. Allen H. Bunce, Atlanta, secretary of the state medical association, opened the series, October 24, with a talk on Georgia health problems.

Society News.—A symposium on anemia constituted the program of the Burke, Jenkins, Screven Counties Medical Society at Millen, October 4; the speakers were Drs. Randall G. Brown, Garfield; Quinney A. Mulkey, Millen, and Cleveland Thompson, Millen.——Dr. George W. Fuller was elected president of the Fifth District Medical Society at its recent annual meeting, succeeding Dr. Joseph Yampolsky.——In a paper before the Fulton County Medical Society, Atlanta, November 15, Dr. Benjamin H. Clifton reviewed mortality following operation on the thyroid gland in Atlanta during the past five years. Dr. John D. Martin Jr., Atlanta, discussed "Pathologic Physiology of Burns" before the society, November 1.

ILLINOIS

Society News.—Speakers before the staff of Paris Hospital, Paris, November 1, were Drs. Harry A. Oberhelman, Chicago, and Roland M. Klemme, St. Louis, on "Tumors of the Breast" and "Diagnosis and Treatment of Brain Tumors."——Dr. Richard H. Jaffe, Chicago, addressed the Peoria City Medical Society, November 20, on endocarditis; he also addressed the dinner meeting on essential hypertension.——Dr. Oliver S. Ormsby, Chicago, gave an illustrated lecture before the Sangamon County Medical Society, Springfield, October 30, on mycotic infections of the skin.——Dr. William C. Danforth, Evanston, discussed the treatment of abortion before the Bureau County Medical Society in Spring Valley, November 6.——Dr. Ralph T. Hinton, managing officer of the Manteno State Hospital, addressed a meeting in Elgin, October 24, on "Newer Treatment for Paresis."

Chicago

Society News.—Dr. Frankwood E. Williams, New York, addressed the Illinois Society for Mental Hygiene, November 23, on "Mental Hygiene and Social Forces."——Drs. Leonard E. Markin and Irving J. Shapiro addressed the Chicago Society of Allergy, November 19, on "Rôle of Allergy in Genito-Urinary Diseases."——The Chicago Neurological Society was addressed, November 15, by Drs. George B. Hassin and Theodore T. Stone on "Subacute Combined Degeneration of the Spinal Cord with Epidural Hemorrhage"; Stephen W. Ranson, "Some Functions of the Hypothalamus," and Howard Zeitlin, "Unusual Tumors of the Pineal Body."——At a meeting of the Chicago Ophthalmological Society, November 19, the speakers were Drs. Palmer W. Good on "An Intranasal Operation for Restoring the Normal Function of the Lacrimal Duct"; Oscar B. Nugent, "Recession Operation with Suture Control," and Elias Selinger, "A New Treatment of Trachoma."——Dr. Bernard Myers, London, England, discussed "Essential (Thrombocytopenic) Purpura Hemorrhagica" before the Chicago Pediatric Society, November 20.——At a meeting of the Institute of Traumatic Surgery, November 20, Dr. Edson B. Fowler, Evanston, Ill., talked on "A New Operation for Habitual Dislocation of the Shoulder," and Dr. Harry R. Hoffman, "The Traumatic Neuroses."——Dr. Robert H. Crawford, Indianapolis, addressed the Chicago Society of Clinical Laboratory Technicians, November 20, on "Recent Discoveries in Anemias and Blood Volume Determination."

INDIANA

District Meeting.—At the annual meeting of the Thirteenth District Medical Society, November 7, in Michigan City, the following program was presented:

Dr. Kenneth T. Knode, South Bend, Recent Advances of Pediatrics.
Dr. George S. Bond, Indianapolis, Heart Disease in Children.
Dr. Homer G. Hamer, Indianapolis, Problems of the Prostate and the Limits of Resection.

A banquet concluded the session. Addresses were given by Dr. Everett E. Padgett, Indianapolis, on "Medical Organization from an Economic Standpoint" and Dr. Roscoe L. Sensenich, South Bend, "Present Status of Health Insurance and State Medicine."

Society News.—The Indiana State Medical Association created a section on anesthesia at its recent annual meeting.——Speakers before the Northwestern Academy of Medicine at Kendallville, October 25, included Drs. John S. Coulter, Chicago, on "Treatment of Chronic Arthritis," and Everett E. Padgett, Indianapolis, "Medical Legislation."——Dr. Karl A. Menninger, Topeka, addressed the Terre Haute Academy of Medicine, October 5, on "Limitations in the Therapeutic Application of Psychoanalysis."——A symposium on undulant fever was presented before the Indianapolis Medical Society, November 13, by Leo P. Doyle, Ph.D., associate in animal pathology, Purdue University, and Dr. John A. MacDonald. Dr. Roy W. Scott, Cleveland, discussed vascular disease at the society's meeting, October 30.——Dr. Matthew Winters, Indianapolis, discussed "Nutritional Diseases and Infant Feeding" before the Tippecanoe County Medical Society in Lafayette, November 8.

MARYLAND

Term of Health Commissioner Extended.—Under a recent amendment to the city charter, the term of the health commissioner of Baltimore is now six years instead of the previous four year appointment. It provides that Dr. Huntington Williams' term will expire Oct. 1, 1938, instead of Oct. 1, 1935. The change was a part of the charter revision program sponsored by Mayor Jackson, and will, he expects, take the position of health commissioner out of politics. The amendment also makes it mandatory for a candidate for this office to have at least five years' actual experience in public health work performed by departments of federal, state or municipal governments.

Society News.—The Medical and Chirurgical Faculty of Maryland held a joint meeting with the Medical Society of the District of Columbia, November 16, with the following speakers: Dr. Walter Freeman, "Malaria Treatment of Neurosyphilis"; Dr. Charles Armstrong, "Etiology and Distribution of Encephalitis (St. Louis Type) in the United States"; Drs. James F. Mitchell and Alexander B. Moore, "Duodenal Ulcer: Surgical and Roentgenologic Aspects," and Dr. Henry L. Darner, "The Preliminary Care of the Cervix in Supravaginal Hysterectomy."——A recent meeting of the Allegany-Garrett County Medical Society was addressed by Drs. Lawson Wilkins and George E. Bennett, Baltimore, on "Management of Measles, with Special Reference to the Use of Convalescent Serum," and "Management and After-Treatment of Poliomyelitis," respectively.

MASSACHUSETTS

Medical Pageant.—The evolution of the concept of circulation and respiration was the theme of the 1934 medical pageant presented, November 19, by students of Tufts Medical College under the auspices of the Boston Medical History Club. The history of midwifery was portrayed by women students of the school. There was an exhibition of the texts of the characters represented, selected from the material in the Boston Medical Library. The students write their own parts in these pageants, after research into the writings of the scientists whom they are to represent. The director of the library, Mr. J. F. Ballard, does the editing. The pageants have been produced annually since 1929.

MICHIGAN

Maimonides Anniversary.—The eight hundredth anniversary of Maimonides will be observed in 1935, probably in March, in a joint celebration of the silver jubilee of the Maimonides Medical Society of Detroit. Maimonides was a physician, rabbi and sage of the twelfth century.

Society News.—Speakers before the Wayne County Medical Society, November 19, were Drs. James M. Stanton on "Problems Presented by the Constitutional Psychopath"; Harry E. August, "Newer Attitudes Toward Mental Abnormalities," and Heinrich A. Reye, "Neurotic Reactions in Marriage." All are of Detroit.——Dr. William E. Keane addressed the Bay County Medical Society in Bay City, November 14, on "Transurethral Prostatectomy."——Dr. Joseph C. Bloodgood, Baltimore, addressed a public meeting in Jackson, under the auspices of the woman's auxiliary of the Jackson County Medical Society, on cancer.

University News.—The University of Michigan Pediatrics and Infectious Disease Society met in Ann Arbor, November 23-24; speakers included Dr. Louis W. Sauer, Evanston, Ill., on "Early Diagnosis of Whooping Cough and the Use of Vaccine as a Preventive Measure"; Dr. Harold B. Rothbart, Ann Arbor, "Myasthenia Gravis in Children." The evening session, Friday, was an open forum on the endocrines with the following speakers: Drs. Elwood A. Sharp, Detroit; Robert L. Schaefer, Detroit, and John L. Law, Ann Arbor. Saturday morning was devoted to a discussion of allergy by Emma L. Wardell, Drs. David M. Cowie and Meryl M. Fenton, all of Ann Arbor, and Dr. Samuel Levin, Detroit.

Annual Clinic.—The Highland Park Physicians' Club will hold its ninth annual clinic day, December 5. According to the tentative program, the following physicians will speak:

Dr. Edward J. Stieglitz, assistant clinical professor of medicine, Rush Medical College, Chicago, Hypertension.
Dr. John W. Carmack, associate professor of rhinology, otology and laryngology, Indiana University School of Medicine, Indianapolis, Otitis Media and Its Complications.
Dr. Arthur W. Stillians, professor of dermatology, Northwestern University Medical School, Chicago, Dermatology in General Practice.
Dr. Arthur M. Mendenhall, professor of obstetrics, Indiana University School of Medicine, Newer Things in Obstetrics.
Dr. Thomas D. Allen, associate clinical professor of ophthalmology, Rush Medical College, Chicago, Eye Manifestations of Systemic Disease.
Dr. Claud R. G. Forrester, clinical professor of surgery, Loyola University School of Medicine, Chicago, Fractures.
Dr. Edward A. W. Morgan, senior demonstrator in pediatrics, University of Toronto Faculty of Medicine, Cyanosis of the New-Born.
Dr. Ellis Fischel, associate professor of surgery, St. Louis University School of Medicine, Cancer of the Breast.
Dr. Russell L. Haden, on the staff of the Cleveland Clinic, Problem of Chronic Arthritis.

MINNESOTA

Dr. Woodworth Honored.—Dr. Elizabeth A. Woodworth, bacteriologist of the Minneapolis health department since 1913, was honorably retired on her seventieth birthday, October 30. She had been connected with the department since 1901. Associates presented her with a wrist watch. The Hennepin County Medical Society also honored Dr. Woodworth with a gift of a silver bowl bearing the following inscription: "Dr. Elizabeth A. Woodworth, for Thirty-Three Years of Unusual Service to Humanity, Hennepin County Medical Society, October 29, 1934." Dr. Woodworth is a graduate of the Minneapolis College of Physicians and Surgeons.

MISSISSIPPI

Society News.—Speakers before the South Mississippi Medical Society at a recent meeting included Drs. James S. McLester, Birmingham, Ala., President-Elect, American Medical Association, on "Deficiency Diseases as a Clinical Problem"; Eugene B. Vickery, New Orleans, "Treatment of Acute Gonorrhea"; Eugene A. Bush, Laurel, "Spontaneous Rupture of an Apparently Normal Spleen"; Thomas B. Sellers, New Orleans, "Indications for Therapeutic Abortion"; William H. Anderson, Booneville, "Appendicitis"; Van C. Temple, Hattiesburg, "Otitis Media in Infancy," and Lew Wallace, president of the Mississippi Pharmaceutical Association, "The New Pharmacy Law as It Applies to the Physicians, Druggists and the Public." Dr. Hugh L. McKinnon, Hattiesburg, conducted a round table on the toxemias of pregnancy.

MISSOURI

Tuberculosis Conferences.—The third annual clinical conferences on tuberculosis held by the St. Louis Health Department opened November 5. The first conference, November 5-22, was given over to a general consideration of tuberculosis, while the second, November 8-26, and third, November 15-December 3, were symposiums on laboratory diagnosis and on diagnosis and treatment of complications of pulmonary tuberculosis, respectively. A general consideration of the disease is the subject of the last session, November 19-December 6. The conferences were held at Isolation and Koch hospitals and were presented to interest the general practitioner.

Society News.—Speakers before the Jackson County Medical Society, November 13, were Drs. John Aull on "Vitamins A and D and the Common Cold" and John McLeod, "Trichinosis."——At a meeting of the Nodaway County Medical Society, November 7, Dr. Wilson A. Myers discussed the diagnosis and treatment of diaphragmatic hernia, and Dr. Claude J. Hunt, Kansas City, surgery of the stomach.——Dr. Richard L. Sutton, Kansas City, addressed the Cole County Medical Society in Jefferson City, October 31, on diagnosis and treatment of cancer of the skin; in the evening he gave a talk on Africa, India, Indo-China and the Arctic.

MONTANA

Society News.—Dr. Ernest D. Hitchcock, Great Falls, among others, addressed the Yellowstone Valley Medical Society in Laurel, on "Gastric Analyses."——Speakers at a meeting of the Eastern Montana Medical Association and the Northeastern Montana Medical Association at Circle in October included Drs. Everett N. Jones, Wolf Point, on "Gangrene of the Omentum with Recovery," and Malcolm D. Winter, Miles City, "Tularemic Pneumonia."——The Mount Powell Tri-County Medical Society was entertained, October 9, by Drs. Eugene G. Wilcox, Drummond, and Arthur C. Knight, Philipsburg. In addition to the hosts, speakers included Dr. James C. Shields, Butte, and Judge D. M. Duefee, Philipsburg.——The Glacier County Medical Society is being organized, according to the *Journal-Lancet.*

NEW YORK

Program for Tuberculosis Control.—The Buffalo Board of Health has recently adopted a comprehensive, coordinated program for the control of tuberculosis. A tuberculosis division will be created in the health department, with a director who will be responsible for details concerning admission to clinics and for their clinical and nursing staffs, hospital admissions, social service, financial investigations, educational and occupational programs. The proposed program also calls for construction of a preventorium for children who show malnutrition and removal of children from homes in which there are open cases. Changes in the present arrangements for admission of patients to hospitals are also contemplated.

Society News.—Dr. Timothy B. Leary, medical examiner of Suffolk County, Boston, addressed the Medical Society of the County of Albany, November 17, on "Atherosclerosis: The Most Important Form of Arteriosclerosis, A Metabolic Disease."——Drs. Walford T. Rees, Burlington, Vt., and Leo F. Schiff, Plattsburg, addressed the Franklin County Medical Society, Malone, October 24, on "Treatment of Burns" and "Practical Management of Diabetes," respectively.——Dr. William T. Getman, Buffalo, addressed the Utica Academy of Medicine, November 15, on "Bleeding During Pregnancy and Labor—Causes, Differential Diagnosis and Treatment."——Dr. Charles J. Barone, Pittsburgh, addressed the Jamestown Medical Society, October 25, on treatment of puerperal sepsis.

Dr. Parran Resigns from Radio Advisory Council.—Dr. Thomas Parran Jr., Albany, state health officer, resigned from the public health committee of the National Advisory Council on Radio in Education, November 20, after the Columbia Broadcasting System had refused to permit him to mention control of syphilis in a radio talk on "Public Health Needs." A brief nontechnical reference to life-saving possibilities through scientific control of the disease had been approved by Levering Tyson, secretary and director of the advisory council, before the last minute ban was laid down. A bulletin from the state department of health points out that as assistant surgeon general in the U. S. Public Health Service in charge of the division of venereal diseases, as health commissioner of New York and as an official of the American Social Hygiene Association, Dr. Parran has advocated a public health attack on venereal diseases. The statement also cited the fact that a large insurance company recently ran a series of advertisements throughout the country on the menace of syphilis. Summing up the needs for public health, he mentioned syphilis as one of the problems against which a frontal attack should be made. To accomplish these results he urged a full time, well trained health officer for every city and every county; a well organized health department in each state; a simplification of the present cumbersome and disjointed federal health machinery through a federal department of health.

New York City

Third Harvey Lecture.—The third lecture of the season before the Harvey Society will be given, December 20, at the New York Academy of Medicine by Dr. Wilbur A. Sawyer, associate director, International Health Division, Rockefeller Foundation. Dr. Sawyer's subject will be "The Present Geographical Distribution of Yellow Fever and Its Significance."

Sims Statue Rededicated.—A bronze statue of Dr. James Marion Sims, eminent surgeon and gynecologist and founder of the Woman's Hospital, was unveiled in Central Park, October 21. The statue, originally dedicated Oct. 20, 1894, first stood in Bryant Park but was placed in storage several years ago when the park was torn up. Now it stands on a pedestal in the park facing Fifth Avenue and One Hundred and Third Street opposite the building of the New York Academy of Medicine. Dr. Bernard Sachs, president of the academy, Dr. George Gray Ward, representing the Woman's Hospital, John H. Finley, LL.D., editor of the New York *Times,* and W. Earle Andrews, representing the park department, made addresses at the ceremonies, and Dr. Alice Gregory, a granddaughter of Dr. Sims, unveiled the statue. Dr. Sims died in 1883.

Medical and Dental Meeting.—The fourth annual combined medical-dental meeting sponsored by the joint committee of the organized medical and dental professions of Greater New York will be held at the Hotel Pennsylvania, December 3. Papers will be presented by Drs. Samuel C. Burchell and Joseph Schroff on "The Burning Tongue" and by Dr. Isadore

Rosen on "Dermatologic Manifestations of Oral Diseases and Oral Manifestations of Systemic Diseases." At an evening session Dr. Edward C. Rosenow, Rochester, Minn., will speak on "Importance of Focal Infection as Related to Health," and Frank M. Casto, D.D.S., president of the American Dental Association, on "Transition in the Art and Science of Dentistry." Dr. Maurice O. Magid will present the results of a questionnaire sent to medical and dental colleges in the United States and Canada.

Society News.—A symposium on socialized medicine was presented before the Medical Society of the County of Queens, October 30, by Drs. Thomas Parran Jr., state health commissioner; Samuel J. Kopetzky and Nathan B. Van Etten and Goodwin Watson, Ph.D., associate professor of education, Teachers College, Columbia University. Dr. Angelo L. Soresi gave an afternoon lecture before the society, November 2, on cancer of the colon and rectum.——Dr. William Bierman addressed the New York Physical Therapy Society, November 7, on "Recent Advances in the Diagnosis and Treatment of Peripheral Vascular Disease."——Dr. Mervin C. Myerson addressed the Medical Society of the County of Kings, November 20, on "Petrous Pyramid Suppuration (Petrositis)" and Alexander O. Gettler, Ph.D., "The Rôle of Toxicology in the Medical Legal Autopsy."——At a meeting of the New York Surgical Society, November 14, Dr. Mont R. Reid, Cincinnati, presented a paper on "Vascular Diseases of the Extremities," which was discussed by Drs. Louis G. Herrmann, Cincinnati; Leland S. McKittrick, Boston, and William J. Merle Scott, Rochester.——Dr. Marion E. Kenworthy addressed the Women's Medical Association of New York City, November 14, on "Emotional Factors in Physical Disorders."——A symposium on various phases of psychiatry and psychoanalysis was presented at a meeting of the International and Spanish-Speaking Association of Physicians, Dentists and Pharmacists, November 16, by Drs. Frank Pearcy, George W. Henry and Alfred Adler; Victor E. Sears, D.D.S., and Lyon Jacobs, Montreal, Canada, attorney.——Dr. Boris M. Fried addressed the New York Roentgen Society, November 19, on primary carcinoma of the lung.——A symposium on nonmalignant tumors of bone was presented before the New York Pathological Society and the section of surgery of the New York Academy of Medicine, November 22, by Drs. Francis Carter Wood, Raymond W. Lewis and Bradley L. Coley.

NORTH CAROLINA

State Health Officer Appointed.—Dr. Carl V. Reynolds, Asheville, president of the state board of health, has been appointed acting state health officer to succeed Dr. James M. Parrott, who died November 7. Dr. Reynolds was health officer of Asheville for twenty years and has served as president of the Buncombe County Medical Society and the Medical Society of North Carolina. Dr. Sylvester D. Craig, Winston-Salem, succeeded Dr. Reynolds as president of the state board of health.

University News.—A two day course in fractures was presented at Duke University School of Medicine, Durham, October 12-13. Physicians who gave addresses and demonstrations included Drs. Philip D. Wilson, New York; William M. Roberts, Gastonia, and Oscar L. Miller, Charlotte; H. Earle Conwell, Fairfield, Ala.; Frank Adelbert Hoshall, Charleston, S. C.; Joseph Warren White, Greenville, S. C.; Hugh A. Thompson, Raleigh; Guy W. Leadbetter, Washington, D. C., and Claude C. Coleman, Richmond. A similar course was given for Negro physicians, October 16.

Society News.—Dr. Francis Bayard Carter, Durham, addressed the Guilford County Medical Society, Greensboro, November 1, on "Management of Breech Presentations."——Dr. Robert A. Ross, Durham, among others, addressed the New Hanover County Medical Society, Wilmington, September 20, on "Functional Uterine Bleeding."——The Wayne County Medical Society celebrated the thirtieth anniversary of its organization at a banquet, October 5, in Goldsboro. Dr. Claude C. Coleman, Richmond, Va., made an address on injuries to the brain. Drs. Paul H. Ringer, Asheville, president-elect of the state medical society; Charles S. Mangum, dean, University of North Carolina School of Medicine, Chapel Hill, and Wilburt C. Davison, dean, Duke University School of Medicine, Durham, made impromptu talks.

OHIO

Personal.—Dr. Max M. Zinninger has been appointed assistant dean at the University of Cincinnati School of Medicine, and Lawrence O. Morgan, Ph.D., has been promoted to associate professor of anatomy.

Health Officers' Meeting.—The fifteenth annual conference of health commissioners with the state department of health was held in Columbus, November 14-16. Among speakers were Drs. Frank G. Boudreau, acting chief of the Health Section of the League of Nations, Geneva, Switzerland, formerly connected with the state department of health; Henry J. Gerstenberger, Cleveland, on "Tuberculosis in Children and the Mantoux Test"; Arthur G. Helmick, Columbus, "Nutritional Fads and Facts from the Viewpoint of the Clinician," and Clayton C. Perry, Cleveland, "Amebiasis." Dr. William G. Rhoten, Wooster, was elected president.

PENNSYLVANIA

Illegal Practitioners Prosecuted.—A list of illegal practitioners prosecuted by the bureau of law enforcement of the department of public instruction during the period January 1 to October 1 includes the following cases in which the defendants were convicted:

Mrs. M. W. Rhone, Mount Union, fined $10 and costs.
V. M. Domke, Philadelphia, six months imprisonment.
John K. Rastikis, Greencastle, fined $200 and costs.
G. A. Statti, McKees Rocks, fined $50 and costs.
A. M. Bailey, Philadelphia, fined $100 and costs.
J. F. English, Shamokin, fined $100 and costs.

Philadelphia

Personal.—The Physicians' Square Club gave a testimonial dinner, October 30, in honor of Dr. Joseph B. Wolffe, who is resuming practice after several months' illness.

Gross Lecture.—Dr. Shields Warren, Boston, will deliver the annual Gross Lecture of the Pathological Society of Philadelphia, December 13, on "Recent Advances in the Pathology of the Thyroid Gland."

Society News.—Speakers before the Philadelphia Pediatric Society, November 13, were Drs. Milton Rappaport, on "The Antirachitic Value for Infants of Irradiated Evaporated Milk"; William H. Crawford, Highland Park, Ralph M. Tyson and Miss Katherine Enright, "Weight Loss in the New-Born," and Damon B. Pfeiffer and Jonathan K. Williams Wood, Willow Grove, Pa., who reported a case of cancer of the transverse colon in a 7 year old boy.——Asthma and sensitization were topics of a symposium presented before the Philadelphia County Medical Society, November 28, by Drs. Richard A. Kern, James A. Clarke Jr. and Harry B. Wilmer.——Dr. Albert C. Furstenberg, Ann Arbor, Mich., addressed the section on otolaryngology of the College of Physicians of Philadelphia, November 21, on "Osteomyelitis of the Skull and Osteogenetic Processes in the Repair of Cranial Defects."——Drs. Bernard J. Alpers and Joseph C. Yaskin, among others, addressed the Philadelphia Neurological Society, November 23, on "Recurrent Subarachnoid Hemorrhage."

Pittsburgh

Society News.—Speakers at the meeting of the Allegheny County Medical Society, November 20, were Drs. Joseph S. Baird, on "Preventive Treatment of Measles"; Harry M. Margolis, "Conditions Masquerading as Arthritis," and Theodore O. Elterich, "Gonorrhea in the Child."——Dr. C. Howard Marcy, among others, addressed the Pittsburgh Academy of Medicine, November 13, on "The Race Factor in Tuberculosis, with Special Reference to the Negro."——Dr. John S. Lewis Jr., Youngstown, Ohio, presented a paper on multiple urograms before the Pittsburgh Urological Association, November 13.

TENNESSEE

Sectional Meeting.—The eightieth semiannual meeting of the Middle Tennessee Medical Association was held in Lawrenceburg, November 8-9. Speakers included Drs. William S. Rude, Ridgetop, on "Intestinal Tuberculosis"; Carl R. Crutchfield, Nashville, "Cancer of the Lip and Jaw"; Leonard W. Edwards, Nashville, "Indications for Surgical Treatment of Gastric and Duodenal Ulcer," and Leo C. Harris, Lawrenceburg, "Management of Typhoid Fever." The address of the president, Dr. Theodore Morford, Nashville, was on health insurance. Dr. James R. Connell, Adams, was elected president.

Society News.—Dr. Edwin L. Ellis, Maryville, was elected president of the East Tennessee Medical Association at the annual meeting in Maryville, October 2.——Drs. Claude E. Tubb, Sparta, and James Fred Terry, Cookeville, addressed the Five County Medical Society (Cumberland, Overton, Putnam, Jackson and White counties), September 20, on iritis and hemorrhage in obstetrics, respectively.——At a meeting of the Dyer, Lake and Crockett Counties Medical Society, October 3, speakers were Drs. John O. Manier, Nashville, president of the Tennessee State Medical Association, on "The Program for Reorganization of the State Health Department"; Harrison

H. Shoulders, Nashville, secretary of the association, "State Medicine," and Lucius C. Sanders, Memphis, "Diseases of the Colon."——Drs. John L. Cooley and Olango G. Hughes, Chattanooga, addressed the Hamilton County Medical Society, Chattanooga, November 15, on "Diseases of the Rectum" and "Intestinal Intoxication," respectively.——Dr. Albert Weinstein addressed the Nashville Academy of Medicine and Davidson County Medical Society, November 13, on "Diagnosis and Treatment of Addison's Disease."

TEXAS

Surgeons' Meeting. — Drs. Gordon B. New, Rochester, Minn., and Edwin P. Sloan, Bloomington, Ill., were guest speakers at a meeting of the Texas Surgical Society in Houston, October 8-9, discussing "Current Problems in Reconstructive Surgery of the Face and Neck" and "Procidentia," respectively. Dr. Ernst W. Bertner, Houston, was elected president and Dr. Richard J. White, Fort Worth, secretary.

Society News.—A symposium on treatment of syphilis was presented at a meeting of the El Paso County Medical Society, September 10, by Drs. Adolf W. Multhauf, Leslie M. Smith and Chester D. Awe, El Paso; Dr. Robert B. Homan, El Paso, spoke on "The Value and Limitations of the X-Rays in the Diagnosis of Pulmonary Tuberculosis."——Drs. Byron Arthur Jenkins and Gustave E. Henschen, Sherman, addressed the Grayson County Medical Society, Sherman, September 12, on "External Heat as a Cause of Fever in Children" and "Backache," respectively.——Dr. Leonard A. Myers, Houston, among others, addressed the Harris County Medical Society, Houston, September 12, on "Gas Bacillus Infection."——Speakers before the Jefferson County Medical Society, Port Arthur, September 10, were Drs. Frank J. Beyt, Port Arthur, on "Recent Advances in Treatment of Pertussis" and Leslie C. Powell, Beaumont, "Carcinoma of the Cervix."——Mrs. Margaret Sanger, New York, addressed the Dallas County Medical Society, November 22, on "Operation of Birth Control Clinics."

WISCONSIN

Society News. — Speakers at a meeting of the Vernon-Monroe-Juneau Counties Medical Society, October 4, were Drs. Harold E. Marsh and Herbert W. Virgin Jr., Madison, on "Management of Heart Disease" and "Fractures of Hands and Feet," respectively.

Weyauwega Honors Dr. Jones.—The fiftieth anniversary of Dr. Edward H. Jones's entrance into medical practice was celebrated by the town of Weyauwega, November 4, with a reception arranged by the Lions Club and attended by more than 600 persons. Among the audience were the first child at whose birth Dr. Jones officiated, now a woman of 50, and the latest, a month old infant. Dr. Jones began his practice in Weyauwega Nov. 8, 1884, shortly after his graduation from Rush Medical College, Chicago. He has for many years been president of a local bank and for years was president of the town school board.

GENERAL

Personal.—Drs. Hugh S. Cumming, surgeon general of the U. S. Public Health Service, Washington, D. C.; Bolivar J. Lloyd of the Public Health Service and the Pan-American Sanitary Bureau, and Kendall Emerson, executive secretary of the National Tuberculosis Association and the American Public Health Association, attended the Pan-American Sanitary Conference, which opened in Buenos Aires, November 12.

New Forms for Hospital Records.—A committee of the American Sanatorium Association, assisted by the staff of the National Tuberculosis Association, has devised a set of twenty-three new forms for uniform and complete records of patients in sanatoriums for tuberculosis. It is stated that the new forms will simplify the collection of statistics by making all information about a given patient available for instant consultation. Dr. Everett Morris, Auberry, Calif., was chairman of the committee, which spent two years in its work. The forms are published by the Livingston Press, Livingston, N. Y.

Board of Psychiatry and Neurology.—In the announcement of the formation of the American Board of Psychiatry and Neurology in THE JOURNAL, November 17, page 1547, the names of Drs. Clarence O. Cheney, Louis Casamajor and Edwin C. Zabriskie, all of New York, were omitted. These physicians compose a committee to consider plans for examinations, credentials and forms for application blanks.

Clinical Meeting. — Dr. Cyrus C. Sturgis, Ann Arbor, Mich., was elected president of the Central Society for Clinical Research at the annual meeting in Chicago, November 2-3, and Dr. Lawrence T. Thompson, St. Louis, was reelected secretary. The scientific program included the following speakers:

Dr. Edward L. Tuohy, Duluth, Minn., An Introduction to the Subject of Bone Marrow (Sternal) Biopsies.
Dr. Adolph Sachs, Omaha, Iron and Copper in Human Blood.
Dr. Willis M. Fowler and Adelaide P. Barer, Ph.D., Iowa City, Iron Retention Following the Oral Administration of Ferric Ammonium Citrate in Hypochromic Anemia.
Drs. Charles A. Doan, George M. Curtis and Bruce K. Wiseman, Columbus, The Rôle of the Spleen and the Efficacy of Emergency Splenectomy in Acute Erythroclastic and Thromboclastic Crises and in Hypoplastic Anemia.
Drs. Robert T. Porter and Walter L. Palmer, Chicago, Studies on the Intrinsic Factor (Castle) in Subacute Combined Cord Degeneration Without Anemia.
Drs. J. Murray Kinsman and John Walker Moore, Louisville, Effect of Fever on the Circulation.
Dr. Edwin G. Bannick, Rochester, Minn., Diagnostic Features of Acute Pancreatitis.
Dr. Harold Feil, Cleveland, A Clinical Study of the Electrocardiograms and of the Phases of Cardiac Systole in Pellagra.

Society News. — Dr. Buford G. Hamilton, Kansas City, was chosen president-elect of the Central Association of Obstetricians and Gynecologists at the annual meeting in New Orleans, November 1-3, and Dr. Willard R. Cooke, Galveston, Texas, was installed as president. Drs. Jean Paul Pratt, Detroit, and Ralph A. Reis, Chicago, were elected vice presidents and secretary, respectively. The next annual meeting will be held in Omaha in October 1935.——The American Therapeutic Society has set the date for its 1935 meeting for June 7-8, at the Hotel Traymore, Atlantic City.——The Federation of American Societies for Experimental Biology, comprising the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics and the American Society for Experimental Pathology, will hold its annual meeting in Detroit, April 10-13, 1935.——The American Institute of Nutrition will hold its second annual meeting in Detroit, April 10, 1935.——The Society of American Bacteriologists will hold its annual meeting in Chicago, December 27-29, under the presidency of Dr. Milton J. Rosenau, Boston.

Twenty-Five Years of Mental Hygiene.—The National Committee for Mental Hygiene celebrated the twenty-fifth anniversary of its founding at an afternoon meeting followed by a dinner at the Waldorf-Astoria, New York, November 14. At the afternoon session the subject of discussion was "The Challenge of Childhood," with Dr. Ira S. Wile, New York; Carleton W. Washburne, Ph.D., Winnetka, Ill., and Dr. James S. Plant, Newark, N. J., as speakers. At the dinner, speakers were Dr. Adolf Meyer, Baltimore, one of the founders of the committee, who traced the development of the organization; James R. Angell, LL.D., president of Yale University, New Haven, who spoke on mental hygiene in education; Dr. Milton J. Rosenau, Boston, mental health in the public health movement; Dr. Clarence M. Hincks, New York, director of the committee; Dr. Arthur H. Ruggles, Providence, R. I., president of the committee; Hon. Jacob Gould Schurman, former president of Cornell University, and Mr. Clifford W. Beers, New York, founder of the mental hygiene movement and secretary of the committee. The last four discussed activities and plans for the future. In recent years the committee has given attention to preventive work, notably in the establishment of child guidance clinics in which early tendencies toward mental difficulties may be corrected. Among accomplishments of the movement have been also the amending of laws to make possible more enlightened care, planning of hospital construction and the establishment of a uniform system of statistical reporting.

HAWAII

Society News.—A symposium on roentgen rays constituted the program before the Honolulu County Medical Society, November 6. Speakers at the October meeting of the society included Lieut. Comdr. Paul P. Maher, on "X-Rays in Duodenal Ulcer"; Lieut. Comdr. Harold E. Ragle, "Histamine in Gastric Analysis," and Lieut. Bartley W. Hogan, "Forced Spinal Fluid Drainage in Pneumococcic Meningitis." Comdr. Lester L. Pratt exhibited motion picture films on thoracoplasty. This program was held at the U. S. Naval Hospital at Pearl Harbor.

CORRECTION

Grade Made in Examination. — The Wisconsin State Board of Examiners requests publication of a correction in the report of its June examination, published in THE JOURNAL, November 17, page 1563. The applicant from the Woman's Medical College of Pennsylvania received an average grade of 83.31 per cent, instead of 77 per cent, as at first reported.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 3, 1934.

The Present Position of Radium Therapy

The fifth annual report of the National Radium Trust and Radium Commission for 1933-1934 shows the present state of radium therapy in this country. The amount of radium owned by the trust is just over 19 Gm., which is sufficient for the needs of the various centers. Owing to change in technic, containers of a type now regarded as obsolete have been broken down and new ones substituted for them. The trust is awaiting with interest the results of a scheme of research that is being carried out at the Radium Institute under the supervision of a special governing body, concerning "beam therapy," in which use is made of a highly penetrating beam of rays directed on the malignant growth from a large quantity of radium (what used to be called a "bomb") not in direct contact with the body.

A PHYSICAL RESEARCH

Cornish radium, lent by the trust to the National Physical Laboratory, has been used in an investigation made with the object of enabling gamma-ray dosage to be measured in terms of the roentgen, the ionometric unit adopted internationally for the measurement of x-ray dosage. The roentgen represents a certain degree of ionization of air, which can be determined by suitable ionization chambers. These may be (*a*) small closed "air-wall" chambers in which the measured volume of ionized air is prescribed by enclosing walls composed of some light element, the whole chamber being enveloped by the beam radiation, or (*b*) large parallel-plate "free-air" chambers in which a narrow beam of radiation is used and the measured volume of ionized air is not prescribed by boundary walls but is wholly surrounded by air. Preliminary measurements indicate that in the case of gamma rays scattered radiation plays a prominent part and that only when a narrow beam of radiation is used and the walls of the air-wall chamber are thin do the results agree with those from the free-air chamber. If the walls are thick, or if a wide beam of radiation is used, the results from the air-wall chamber are much higher than those from the free-air chamber. It appears likely that it will be possible to specify conditions under which the roentgen can be realized in the gamma ray region with sufficient accuracy for present purposes.

THE DEVELOPMENT OF CENTERS

Both efficiency and economy require that patients should be brought to the centers, which possess fully equipped clinics and specialist staffs, rather than that radium should be taken to patients. The commission also hopes that a policy will be adopted of "pooling" the radium lent by it with that which is the property of the hospitals, and the use, in a single scheme, of the total stock within the center. Economy of radium time requires an adequate number of beds for the accommodation of a large number of patients. The modern tendency to combine treatment by x-rays with that by radium is further reason for the concentration of treatment at the centers. Finally, if the hopes of those using beam therapy are realized, this will be another reason for concentration.

THE GRADUATE SCHOOL OF RADIOTHERAPY

The efficiency of the graduate school at Mount Vernon Hospital, London, has been increased by the appointment of a physicist. The school has four resident appointments—two at the hospital and two at the Radium Institute—which afford a fine opportunity for learning the technic and possibilities of radium treatment. In conjunction with the British Institute of Radiology, a course of radiotherapy was held and was attended by twenty-two candidates. At the request of the London School of Hygiene and Tropical Medicine, a demonstration was held for a class preparing for the Diploma in Public Health.

ONE GRAM UNIT THERAPY

In August 1932, 1 Gm. units were put at the disposal of the Cancer Hospital, the Middlesex Hospital and University College Hospital, for the purpose of ascertaining the value of this unit in the treatment of malignant disease. It has been in continuous use at these hospitals for nineteen months. In the year ended April 1, 1934, 251 cases were treated. They included growths in the tongue and mouth, lip, cheek, tonsil, pharynx, larynx, antrum, breast and penis. The commission thinks that five years must elapse before the value of the treatment can be assessed but that an interim report this year would be of value, chiefly perhaps in differentiating, without attention to variations in technic, between the results of the several methods used in various sites. An investigation directed to this end is in progress.

FUTURE DEVELOPMENTS

The technic of radium treatment has developed to standard forms. One feature of this evolution is the demand for large quantities of radium for use outside the body, preferably at an appreciable distance—several inches—from the skin. The quantity usually considered necessary for effective action when used at a distance is at least 1 Gm. This unit is in use in three hospitals. The commission learns that it is likely to serve a very useful purpose. No doubt the experience gained will enable those practicing this form of treatment to use larger units with greater confidence. Since the end of 1933 the Radium Beam Therapy Research Board has had under investigation treatment with a 5 Gm. unit.

Short Wireless Waves in the Treatment of Disease

The treatment of chronic inflammation, especially of deep-seated structures, by short waves, similar to those used in broadcasting, is already popular on the continent of Europe. The first report of their use in England has been published in the *British Journal of Physical Medicine* by Dr. W. J. Turrell, medical officer to the electrotherapy department at the Radcliffe Infirmary, Oxford. These waves are usually only from 6 to 30 meters long and are generated by thermionic valves or by a spark gap machine. They can be passed into a patient without any contact between him and the source of the current. While the surface of the body remains comparatively cool, heat is generated in the tissues within. Dr. Turrell tested the effects of these short waves on white of egg and on pieces of bullock's liver. He found that they differ from those used in diathermy, in which the electrodes are in contact with the patient's body, in the more violent oscillations of an electromagnetic nature set up in the treated tissues. He obtained the best results in the treatment of parts connected with or closely underlying bony structures and in inflammatory conditions closely beneath the surface. Pain unrelieved by other methods yielded to this method. A great difficulty is the cost of the apparatus, as the power required to produce these short waves is much greater than for longer ones.

International Congress on Life Assurance Medicine

An international congress on life assurance medicine will be held in London from July 23 to July 27, 1935. This conference is the first of the kind since 1903 and the first to be held in this country. The president will be Dr. Langdon Brown, regius professor of medicine in the University of Cambridge. The principal subjects for discussion will be methods of estimating risks, the prognosis of hypertension, the acceptance of persons with glycosuria, gastroduodenal ulceration and life

assurance, and the rôle of health service in life assurance. For physicians of Great Britain and Ireland, membership is restricted to members of the Assurance Medical Society and to such other physicians as are interested in life assurance and whose application for membership is approved by the congress committee. The honorary secretary is Dr. Otto May, 142 Holborn Bars, London, E. C. 1.

Gas Warfare

Major General C. H. Foulkes, an officer of engineers who held the position of "gas adviser" for the greater part of the war and raised, trained and commanded "the special brigade," a secret unit organized for the purpose of gas attacks, has published an interesting book entitled "Gas! The Story of the Special Brigade." He shows the horrors that may have to be guarded against in any future war. Against the well disciplined troops on the western front gas caused nearly a million casualties. What will be its effect on civilian populations ill trained and inadequately supplied with protective apparatus? He enlisted the services of the best scientific brains in the country and in the later stages of the war became the president of the Chemical Warfare Committee. Throughout the war he urged the use of gas discharged in clouds on a stupendous scale before a major attack. His plans for the unfought campaign of 1919 would probably have resulted in a decisive victory. In the latter part of the war the Germans had some minor successes with Blue Cross shells containing diphenyl chlorarsine. This was a respiratory irritant and caused sneezing. It forced the troops to remove their gas masks and expose themselves to other lethal gases. Samples of this substance were extracted from a German shell and experimented with. It was found that, when a pinch was placed on the hot plate of a stove, every one was driven out of the house and that the latest pattern of German mask, even when fitted to protect against Blue Cross shells, gave no protection against a cloud so produced. A thermogenerator was soon designed to produce this cloud. In the course of investigation an even more suitable deadly compound, diphenylamine chlorarsine, was discovered. It produced an arsenic particulate cloud that could be depended on to incapacitate the enemy completely, if only temporarily. It was discovered too late to be used in France in the war but is claimed by General Foulkes to be the most effective chemical weapon ever devised. He does not believe that future use of gas can be prevented by agreement. Its infinite possibilities in a scientific age preclude any such hope.

PARIS

(From Our Regular Correspondent)

Nov. 12, 1934.

Variations of the Syphilitic Virus

In the September issue of the *Annales de l'Institut Pasteur*, W. Nyka publishes a research on the virus of syphilis which explains some apparent discrepancies as to the etiologic rôle of Spirochaeta pallida in syphilis. In spite of numerous studies, since the discovery of the spirochete of syphilis by Schaudinn in 1895, many of its biologic features remain so obscure that certain authors doubt the specific rôle of the spirochete of syphilis.

Disappearance of the spirochetes is not synonymous with cure. Grave complications often present themselves, long after disappearance of the spirochetes.

Two hypotheses have been proposed to explain this discrepancy. Either these grave complications are due to a virus other than syphilis or the latter is to be found under another than the classic form. Schaudinn leaned toward the second hypothesis; that is, the existence of an invisible form. Levaditi maintains that the nonvisible form can be regarded as an ultravirus, but this view has been accepted by few. Even Levaditi has abandoned the claim that this ultravirus, like others, possesses the property of filtrability.

Nyka studied the question on rabbits and mice inoculated with the virus of syphilis. His conclusions are that Spirochaeta pallida has two distinct forms, a spirochetal and a filamentous. Between the two, one finds all stages of metamorphosis.

The virus of syphilis corresponds thus to the complex "Spirochaeta-filament" with its transitional forms. Syphilis is transmitted by the spirochete, but its rôle and existence are transitional. It disappears as soon as infection of the new host is accomplished. The filamentous form is the basic or fundamental one; hence all the typical pathologic lesions of syphilis must be attributed to this filamentous form. Such a change in morphology does not necessarily carry with it a modification of the biologic properties of the parasite. In other words, the filamentous form is as capable of producing infection as the spirochetal. The latter is a cytotropal virus, that is, can penetrate into the interior of cells and multiply there, within either the nucleus or the cytoplasm. The spirochetal form loses its spiral character within the cell and becomes transformed into a filament. Such a change, however, can occur outside the cells. In its filamentous form, multiplication by transverse division takes place and the resulting filaments are able to change back again into spirochetes. The intracellular multiplication of the parasite kills the cell, but not all types of cells are equally sensitive to the syphilitic virus. Liver cells and fibroblasts are relatively more resistant than those of the nervous or lymphatic structures. Because of the difficulty of staining the filamentous form, which the author succeeded in doing, this form has thus far escaped detection.

Ingestion of Aluminum and Cancer

In view of articles in the daily press, ascribing to aluminum, lead and other substances a cancer-producing action, a recently published experimental study denying such harmful effects is of much interest.

In the July issue of the *Annales de l'Institut Pasteur*, Bertrand and Serbescu report two series of experiments on rabbits. In both series, coal tar was applied at regular intervals to the ears of rabbits in order to produce a cancer. In series A a visible cancer resulted in 78.3 per cent of rabbits living more than forty days. No aluminum was given in this series. In series B an artificial ear cancer resulted in 50 per cent of the animals living over forty days. In this series a solution of aluminum sulphate, representing 10 Gm. of aluminum metal per hundred cubic centimeters, was placed directly in the stomach with the aid of a soft rubber urethral catheter. In series B the animals received a quantity of the solution sufficient to represent 20 mg. of aluminum metal to a kilogram of the rabbits' weight.

In neither series did the necropsies reveal any visible lesion of the stomach or intestine. The authors conclude that the rôle of aluminum or its salts in the production of cancer has been greatly exaggerated. Fear of the ingestion of the minute amounts of aluminum from the use of utensils made from this metal as well as from foods or baking powders in which alum salts are used is not justified by laboratory research.

Bleeding During the Menopause

In 1933, Quénu and Claude Béclère reported forty-four cases of metrorrhagia in patients between the ages of 40 and 50. In every case a curettage (with histologic study of the scrapings) or operation was performed. The patients were reexamined at intervals of from two to eight years.

Béclère has just added fifty-six more cases, making a total of 100 observations in six Parisian hospital services. In this second series a hysterosalpingography, iodized oil being used as a routine procedure, was done. In all cases presenting lesions, following this test, either curettage or operation was done.

A study of these 100 cases reveals that objective surgical lesions existed in only one third, while in the other two thirds the changes in the uterine mucosa were not due to a local lesion but to a functional disturbance of ovarian origin. Such a cause of uterine bleeding is observed at all ages but is most likely to be found during the menopause.

The clinical picture in the majority of cases of metrorrhagia of functional (ovarian) origin presents three main symptoms: The sudden appearance of the bleeding in a woman above 40 who has previously menstruated at regular intervals is the first of the signs. The second is a period of amenorrhea lasting two or three months, which is seen only in cases of ovarian dysfunction. The third sign is metrorrhagia lasting from eight days to six weeks or longer, but there is always an interval of amenorrhea lasting from two to three months. Béclère calls this the "triade symptomatique."

The best method of diagnosis is exploratory curettage preceded if possible by a hysterosalpingography. These will reveal the presence of lesions necessitating operative intervention in about one third of the cases. Such measures are of no avail in the other two thirds, owing to ovarian dysfunction. If medical treatment is not successful in the latter, roentgenotherapy is indicated, to induce an artificial menopause.

The New Vincent Antistreptococcus Serum

The May 22 issue of the *Bulletin de l'Académie de médecine* contains an addition to available therapeutic agents in combating streptococcic infections. Prof. H. Vincent gives the results of the use of his new serum in 136 cases of severe infection due to the more virulent forms of streptococci. All the cases were controlled by hemoculture, which method of diagnosis should be applied at as early a period as possible. The serum should be administered in large amounts subcutaneously, intramuscularly or, if possible, intravenously. The first dose should be 100 cc. given as soon as the results of the hemoculture are positive, preferably even while the report is being waited for.

In septicemia or streptococcic meningitis the daily dose of 100 cc. suffices, but in the malignant forms of diphtheria daily doses up to 250 cc. have been given. The serum should be continued as long as the symptoms of infection persist. As soon, however, as the temperature drops, one can reduce the amount of serum injected to 30 cc. and later to 20 cc. during the four or five days after cessation of the fever. Blood transfusion at intervals is the only other treatment necessary. Blood transfusion supplies the alexins that are lacking in streptococcic infections. Epinephrine, cardiac tonics, alcohol in the form of champagne and an ample diet are necessary in certain cases. In a relatively large number the serum has been given too late to be of any avail or the doses were not large enough or not given for a sufficiently long period. The drop in temperature and disappearance of symptoms usually take place between the sixth and eleventh days after the use of the serum is begun. Cases have been observed in which a moderately high temperature persisted despite recession of symptoms, and even a negative blood culture. Such a temperature may be due to the serum itself; hence it is advisable to discontinue its use for a few days while keeping close watch on the symptoms of infection, so as to be ready to resume the serum treatment.

In the report of the results, cases are included in which death occurred from delayed or inadequate administration, as well as from double pneumonia of pneumococcic origin, gangrene following injection of turpentine to produce a local reaction, and rupture of the uterus following criminal abortion.

In 136 cases of streptococcic septicemia there were 111 cures and 25 deaths, a mortality of 18.38 per cent. The list of cures includes streptococcic arthritis, meningitis complicating skull injury throat and ear infections, sinus thrombosis following mastoiditis, septicemia due to ethmoiditis, puerperal phlebitis of severe nature, acute endocarditis (six cures in seven cases), streptococcic empyema, general peritonitis due to puerperal infection, and hemorrhagic nephritis. No other method of treatment has given such a large proportion of cures, 81.62 per cent in 136 cases, according to Professor Vincent.

Cerebral and Abdominal Syndromes in Pneumonia in Children

Professor Nobecourt, in a lecture at the Hospital for Sick Children, emphasized the necessity of being familiar with two syndromes, the meningo-encephalitic and the abdominal, which so frequently render difficult the early diagnosis of pneumonia in children. The meningo-encephalitic syndrome can occur under one of three clinical pictures. Of these, the convulsive form occurs almost always in infants aged less than 3 years. Localized or generalized convulsions may be the first evidence of an illness, accompanied by high fever and the physical evidence of a bronchopneumonia. The other two forms, delirious and somnolent, occur in older children. The delirium is more a state of confusion and lasts only a few days, being ushered in by high fever. Somnolence is a more common symptom than delirium at the onset of a pneumonia in children. These three forms, convulsive, delirious and somnolent, may or may not be accompanied by symptoms like those of an acute cerebral or cerebrospinal meningitis, which are, however, milder and of shorter duration (two or three days). One finds cutaneous hyperesthesia, rigidity of the neck and a slight Kernig sign. At times the meningitic syndrome is quite marked in the form of vomiting, hyperesthesia, and signs of Lasègue and Kernig. These more severe symptoms generally last only a few days but may persist longer.

In these cases of meningeal syndrome in pneumonia, lumbar puncture yields a clear fluid as a rule. Micro-organisms are not found. It rarely occurs that the fluid is turbid or purulent, containing polymorphonuclears and pneumococci. The meningeal or encephalomeningeal syndromes seen at the onset in pneumonias of children belong to the group of serous or attenuated meningitis. They are rarely due to a suppurative pneumococcic meningitis.

The symptoms at the onset are more cerebral than pulmonary. In some cases the physical signs of a pneumonia are well marked, in others they are widely scattered. Often, not a single physical sign is present; that is, the pneumonia is a silent factor in the clinical picture.

BERLIN

(From Our Regular Correspondent)

Sept. 9, 1934.

Food Poisoning Due to Consumption of Duck Eggs

About a year and a half ago attention was called to an outbreak of food poisoning in Westphalia after consumption of duck eggs and probably attributable to them. Among 143 persons affected, two died. In ninety-nine of these cases, bacteria capable of producing enteritis could be established in the intestinal evacuations. Breslau's bacilli were found to be the pathologic agents in many cases of enteritis, and Gärtner's bacilli in five cases. Attention was focused on salads in which duck eggs were used as well as on the preparation of mayonnaise and puddings. In two other epidemics comprising seventy cases, apparently only in the Ruhr coal mining district, similar observations were made by H. Bruns and Fromme. Meanwhile 110 more persons became sick from the end of 1932 to the beginning of 1934. Of the total number of cases known (253) there were six deaths. Many were mild cases and scarcely came to the attention of physicians, so the sum total of cases must have been higher than recorded. After an investi-

gation there was no doubt that there was a causal connection with the duck eggs, and this was strengthened by the fact that on a Dutch duck farm (many Dutch duck eggs are sent to this locality in Westphalia) an epidemic mortality of 80 per cent was reached; in several of these fowls, evidence of the Breslau enteritis bacilli were found in all the organs, in the ovary and in the yolk of the egg and in the intestine. These pathologic agents were found in fowls of the Kaki Campbell stock, which are especially good egg layers, but other stocks also were involved.

Through repeated official warnings the use of duck eggs decreased, with a corresponding decrease in the number of cases of enteritis. Abstinence from raw duck eggs did not completely set aside the danger, because baking and roasting temperatures did not suffice in every case to kill the bacilli in the interior of the egg. Nevertheless a special hygienic control of duck eggs is necessary.

Research on Twins

In a study of the influence of heredity and environment, Prof. O. von Verschuer of the Kaiser Wilhelm Institut für Anthropologie at Berlin has divided twins into three groups: (1) those with the same heredity and environment, (2) those with the same heredity but with different environment and (3) those with different heredity and the same environment. A comparison of groups 1 and 2 shows the degree of environmental influence, that of groups 1 and 3, the degree of hereditary influence.

Influence of Environment and of Heredity

	Environment	Heredity
In body weight	85 per cent	169 per cent
In chest circumference	70 per cent	165 per cent
In height	18.5 per cent	192 per cent
In cephalic index	10 per cent	72.5 per cent

The influence of environment is related to the influence of heredity:

In body weight	as 1: 2
In circumference of thorax	as 1: 2,4
In height	as 1: 10,4
In cephalic index	as 1: 5,6

According to this study the influence of heredity is greater than has been previously assumed.

Biovular twins (those with different hereditary characteristics) develop: (1) by simultaneous fertilization of two ova (by two sperms), the time of twin formation concurring with the fertilization, and (2) in the presence of a hereditary cleavage process through fertilization of the egg and by two direction bodies (by two sperms); likewise here the time of twin formation concurs with the fertilization. In both cases the chorion and amnion are doubled; the placenta is simple or double. Unioval twins (those with the same hereditary characteristics) develop from a hereditary cleavage tendency through cleavage of the embryonic anlage. The time of twin formation concurs with the cleavage. If the cleavage has occurred before the differentiation in the embryoblast and trophoblast, examination of the ovum membrane demonstrates a double chorium and amnion; the placenta is simple or double. If, on the other hand, the cleavage takes place after differentiation, that is, after formation of the embryonic nodules, a double amnion is formed with only a simple chorion. If cleavage appears even later, if therefore the embryonic area and the primary layers are already formed, a simple chorion and amnion result; in both of the latter cases the placenta is simple.

Promoting Hereditarily Healthy Families

To promote hereditarily healthy families, in line with the aim of the present administration, there has recently been established a settlement of "Germanenhof" in Altenburg, Thuringia. In this settlement, nineteen hereditarily healthy and capable families are to be given their own homes. The applicants and their wives must assume the duty of raising their family by two within five years and of having a third and fourth child within an additional five years. Only children considered hereditarily healthy will count. Applicants who do not or cannot fulfil these requirements must leave the family homes put at their disposal within a space of three months.

The Number of War Injured in Germany

The number of war injured in Germany naturally continues to drop. In May 1934 the total number amounted to 804,505. This number is divided according to the degree of injury in the following:

Degree of War Injury	Number Injured
30 per cent	338,461
40 per cent	121,201
50 per cent	135,696
60 per cent	66,606
70 per cent	57,349
80 per cent	30,438
90 per cent	6,291
100 per cent	48,462

Mortality in Germany During the Year 1933

The year 1933, which showed a more favorable birth rate, gave more unfavorable results with respect to mortality than 1932. Previously the numbers for all German communities with more than 15,000 inhabitants were counted; the total number of inhabitants thus came to 29,400,000, that is, 45 per cent of the total population. The number of deaths for 1933 amounted to 305,325, that is, about 15,000 more than 1932; to every thousand inhabitants, 10.4 die as against 9.9. One of the main causes of this increase is the steadily growing number of people belonging to the advanced age classes. Especially the birth years 1860-1864 show a high rate of death as do the preceding years; therefore the typical diseases of old age are prominent among the causes of death. More people died of heart disease, apoplexy and senile debility than in 1932. More than 7,500 people died of bronchitis and pulmonary inflammations; most of these belonged to the advanced age groups. In 1933, influenza played a tremendous part in the cause of death. In the course of the epidemic in January and February 1933, 8,800 persons died, while in 1932 only 2,800 died, of this disease (THE JOURNAL, May 15, 1933, p. 1948). That the influenza epidemic was essentially the cause of this rise in mortality is to be seen from a comparison of districts that were less hit by the disease: in western, northwestern and central Germany the grip raged fiercely and in these districts the mortality was 1 per thousand higher than in 1932, while the average increase for the reich amounted to only 0.5 per thousand. On the other hand, in upper Silesia and southern Germany, which remained untouched by the wave of grip, the death rate was even lower than in 1932.

Whereas these causes of death can be influenced little, it is different in the other causes. The rate of suicide, for example, has rather decreased, as has likewise the number of fatal accidents. Infant mortality showed a marked decrease.

Is There a Labyrinthine Concussion?

A complex of clinical symptoms, especially present in cranial trauma (unilateral or bilateral difficulty in hearing, deafness, ringing in the ears, vertigo and headache) is interpreted as commotio labyrinthi or labyrinthine concussion.

Professor Voss of Frankfort-on-Main, who has been occupied with these questions, has suggested that a summary be made of all changes in the inner ear which appear as a result of trauma to the cranium or spinal column. There is the possibility of similar symptoms in injuries on a distant part of the body, as on the feet or on the buttocks, because the percussion wave is transmitted from them through the spinal column. A number of clinical observations of labyrinthine diseases in gunshot injuries of the cranium make it certain

that both types of injuries must depend on the same or similar physical phenomena. In the small "cerebral concussions," as in commotio cerebri, it is a question of a rise in pressure in the labyrinthine secretion, which, according to the laws of hydrodynamics, may be transmitted in the direction of the percussion or to all sides. Thus under certain circumstances the labyrinthine capsule may explode, as has been proved by Voss in patients having sustained war injuries. In case of weaker impacts, it is assumed that the nerve constituents enclosed within the labyrinthine capsule may be damaged or destroyed. This theory was previously not accepted by otologists, even by Voss, on the ground that the organ of Corti, because of its double embedding in fluid, is ideally protected against lesser concussions. In estimating such cases, one should treat them as traumatic neuroses. Microscopic observations, though few, which have been recently discovered, point to an organic basis for labyrinthine concussions. It is a question of degenerative processes to the nerves and to the organ of Corti. In addition, such degenerations may develop not only through impact of the fluid but also through hemorrhages, as Voss himself has observed. Labyrinthine concussions with simultaneous fracture of the labyrinthine capsule may likewise occur. Animal experimentation, undertaken by Voss, showed consistent hemorrhages, especially in the perilymphatic spaces of the cochlea and between the branches of the cochlear nerve, while the vestibular semicircular canal apparatus remained untouched.

Voss concludes that there is a concussion of the labyrinth in the sense described. Organic changes may be the basis for these labyrinthine concussions, at least of cases of more pronounced auditory disturbance or of deafness of unresponsiveness or of poor responsiveness of the vestibular apparatus.

Marriages

WILLIAM BREENE VANDEGRIFT, Baltimore, to Miss Dorothy Elizabeth Blackman of New London, Ohio, in Oakton, Va., Augusta 10.

RAYMOND CLYDE HERRIN, Madison, Ind., to Miss Mable Elizabeth Hooper of Lake Mills, Wis., in September.

PAUL H. SCHMIEDICKE, Wauseon, Ohio, to Miss Irma Lois McKelvey of Attica, Ind., in Chicago, July 7.

ELLSWORTH MORTON TRACY, Providence, R. I., to Miss Ruth Memory of Maplewood, N. J., October 13.

ARCHIBALD WILLIAM FEES, Carrolltown, Pa., to Miss Juliana Connelly of Pittsburgh, September 10.

KENNETH C. PIERCE, Dowagiac, Mich., to Miss Gertrude Eckhout of Ann Arbor, October 9.

MORDECAI M. MCDOWELL, Bicknell, Ind., to Miss Elizabeth Smith of Indianapolis, November 1.

JAMES LANCASTER DENAUT, Knox, Ind., to Miss Eleanor Erickson of Chicago, September 15.

MELBOURNE JOHN COOPER to DR. JEAN MALCOLM HEAD, both of Philadelphia, September 12.

JAMES OWEN FINNEY to Miss Margaret Pride, both of Florence, Ala., November 3.

PAUL R. HOY, Detroit, to Miss Ellagene Bowen of River Rouge, Mich., August 18.

LOUIS SMITH, Lakeland, Ga., to Miss Leila Hutcheson of East Point, June 2.

FRANCIS ARND HEGARTY to Miss Louise Brieger of Taylor, Texas, August 30.

LEON S. MCGOOGAN to Miss Vera M. Kelley, both of Omaha, Neb., October 20.

LESLIE J. BOONE to Miss Bronwen F. Rees, both of Kingston, Pa., October 17.

IRENE NEUHAUSER to E. L. Gustus, Ph.D., both of Kalamazoo, Mich., July 27.

HARRY E. AUGUST to Miss Helen Shetzer, both of Detroit, October 16.

Deaths

James Marion Parrott ⊕ Raleigh, N. C.; Tulane University of Louisiana Medical Department, New Orleans, 1895; secretary of the state board of health and state health officer; past president of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; formerly member of the state board of medical examiners; at various times served as a member of the board of directors of the State Hospital, Raleigh and member of the board of trustees of the Wake Forest (N. C.) College; connected with the Parrott Memorial Hospital; aged 60; died, November 7, of heart disease.

Philipp Fischelis ⊕ Philadelphia; Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Prussia, 1885; demonstrator of histology and embryology, Medico-Chirurgical College of Philadelphia, 1903-1909, and associate professor, 1909-1917; professor of histology, embryology and general pathology and director of laboratories in the dental school, Temple University; member of the American Association of Anatomists; for many years on the staff of the Mount Sinai Hospital; co-author of "Anatomy and Histology of the Mouth and Teeth"; aged 76; died, October 30, of angina pectoris.

William Hewson Mook ⊕ St. Louis; Beaumont Hospital Medical College, St. Louis, 1900; assistant professor of clinical dermatology, Washington University School of Medicine; member and past president of the American Dermatological Association; served during the World War; aged 55; on the staffs of the Barnard Skin and Cancer Hospital, Barnes Hospital, De Paul Hospital, Missouri Pacific Hospital, Missouri Baptist Hospital and St. Anthony's Hospital, where he died, November 3, of heart disease, following pneumonia.

Henry Clinton Burgess ⊕ Canandaigua, N. Y.; Syracuse University College of Medicine, 1907; member of the American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; served during the World War; aged 51; medical superintendent of the Brigham Hall Hospital; on the staff of the Memorial Hospital, where he died, October 24, of an overdose of a narcotic.

David Walter McFarland ⊕ Greens Farms, Conn.; University of the City of New York Medical Department, 1885; member of the American Psychiatric Association; in 1913 founded the Spring Hill Hospital, Hastings-on-the-Hudson, N. Y.; aged 76; in 1898 established the Hall-Brooke Sanitarium, where he died, October 26, of uremia, myocarditis and arteriosclerosis.

Charles Simonton Jordan, Asheville, N. C.; University of the City of New York Medical Department, 1890; member of the Medical Society of the State of North Carolina; veteran of the Spanish-American and World wars; aged 66; died, October 28, in the Veterans' Administration Facility, Oteen, of myocarditis, arteriosclerosis and nephritis.

John Duncan McMillan, Paris, Texas; Hospital College of Medicine, Louisville, Ky., 1885; member of the State Medical Association of Texas; past president of the Lamar County Medical Society; on the staffs of St. Joseph's Infirmary and the Lamar County Hospital; aged 75; died, August 10, of cerebral hemorrhage.

Sterling Buchanan Hinton, Franklin, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1916; member of the Kentucky State Medical Association; served during the World War; formerly member of the school board; aged 42; died, October 28, in the Southern Kentucky Sanatorium, of chronic nephritis.

Walter Horatio Sturgis, Hull, Mass.; Baltimore Medical College, 1895; member of the Massachusetts Medical Society; served during the World War; member of the board of health; for many years owner of a hospital bearing his name; aged 61; died, October 29, of heart disease.

Frank Wieland ⊕ Chicago; Hering Medical College, Chicago, 1896; formerly professor of genito-urinary diseases, Hahnemann Medical College and Hospital; on the staff of the Henrotin Hospital; aged 65; died suddenly, November 18, of myocarditis and cerebral embolism.

Philip F. Gillette, Kankakee, Ill.; Northwestern University Medical School, Chicago, 1896; aged 64; formerly on the staff of the Elgin (Ill.) State Hospital; on the staff of the Kankakee State Hospital, where he died, October 27, of cerebral hemorrhage.

Manuel Fernandez y Nater, San Juan, P. R.; Bellevue Hospital Medical College, New York, 1896; member of the

Medical Association of Puerto Rico; aged 61; died, June 30, of aortic insufficiency, cardiac decompensation and pulmonary edema.

Jared Waldo Daniels ⊕ St. Peter, Minn.; Rush Medical College, Chicago, 1889; College of Physicians and Surgeons, Medical Department of Columbia College, 1890; served during the World War; aged 67; died, October 9, of coronary occlusion.

David M. Criswell, Coshocton, Ohio; Baltimore Medical College, 1892; member of the Ohio State Medical Association; formerly member of the state legislature; city and county health officer; aged 69; died, October 21, of heart disease.

Thomas H. Baird, Otto, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1888; member of the State Medical Association of Texas; aged 75; died, September 24, in a hospital at Waco, of acute nephritis.

Alexander Charles Calisch ⊕ Oswego, N. Y.; New York Homeopathic Medical College and Hospital, 1891; served during the World War; on the staff of the Oswego Hospital; aged 63; died, September 14, of coronary thrombosis.

Arthur Frazier Shepherd, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1893; member of the Ohio State Medical Association; formerly superintendent of the State Hospital; aged 69; died, October 29, of coronary thrombosis.

Robert Burns McKeage, Scranton, Pa.; Medico-Chirurgical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 64; died, October 2, of epithelioma of the lower lip.

Nathan Hammond ⊕ Plainfield, Ohio; Ohio Medical University, Columbus, 1905; chairman of the county board of health; aged 61; died, October 29, in West Lafayette, of heart disease and pneumonia.

H. Francis Hunt, Jamestown, N. Y.; University of Buffalo School of Medicine, 1898; formerly on the staff of the Jamestown General Hospital; aged 66; died, October 13, of carcinoma of the liver.

Edwin A. Means, Dallas, Texas; Denver College of Medicine, 1893; member of the State Medical Association of Texas; aged 58; died, October 11, of chronic myocarditis and lobar pneumonia.

William H. Tomlinson, Swarthmore, Pa.; Hahnemann Medical College of Philadelphia, 1875; aged 89; died, October 10, of malignant papilloma of the neck and hypostatic pneumonia.

Sylvan David Kahn, Hallettville, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1913; aged 44; died, October 13, of carbuncle of the neck and diabetes mellitus.

Winfield Scott Rowley, Indianapolis; Eclectic Medical Institute, Cincinnati, 1890; Rush Medical College, Chicago, 1891; aged 82; died, October 21, of cardiovascular renal disease.

Gifford Osborne ⊕ Brownsville, Texas; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 61; died, September 24, of coronary sclerosis.

Charles H. Carter, Seaford, Del.; Baltimore University School of Medicine, 1895; aged 65; died, October 5, in the Delaware State Hospital Farnhurst, of ulcerative colitis.

David Orson Miner, San Diego, Calif.; University of the City of New York Medical Department, 1884; aged 74; died, October 11, in Los Angeles, of hypertrophic cirrhosis.

John W. Youngman, Paxton, Neb.; American Medical College, St. Louis, 1883; aged 79; died, July 1, in the Nebraska Masonic Home, Plattsmouth, of cardiovascular disease.

William W. Case, Nebraska, Ind.; College of Physicians and Surgeons, Keokuk, Iowa, 1886; aged 74; died, October 2, of carcinoma of the pylorus and arteriosclerosis.

Henry Frederick Gau, Cincinnati; Medical College of Ohio, Cincinnati, 1894; aged 62; died, October 21, of lymphosarcoma with metastases to the liver and lungs.

Marshall H. Galloway, Rich Pond, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; aged 82; died, October 26, of carcinoma of the spleen.

William Christopher Langhorst, Los Angeles; Northwestern University Medical School, Chicago, 1897; aged 65; died, September 26, of cerebral hemorrhage.

John Adam Quell, Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1902; aged 52; died suddenly, recently, of coronary thrombosis.

Albert Joseph Croft, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 56; died, October 31.

Philip Gouvneur Young ⊕ Sacramento, Calif.; Drake University College of Medicine, Des Moines, Iowa, 1908; aged 56; died, September 18, of heart disease.

David P. Hueston, Jacksonville, Ill.; College of Physicians and Surgeons of Chicago, 1888; aged 84; died, October 31, as the result of injuries received in a fall.

Arthur Joseph Burgess, Deland, Fla.; Harvard University Medical School, Boston, 1882; aged 76; died, October 18, of carcinoma of the prostate and liver.

Elmer E. Polk, Muncie, Ind.; Physio-Medical College of Indianapolis, 1886; aged 70; died, October 12, of chronic myocarditis, nephritis and arteriosclerosis.

Charles Carroll Hyde, Addison, Mich.; University of Michigan Medical School, Ann Arbor, 1876; aged 81; died, October 28, of cerebral hemorrhage.

Edward W. McEssy, Fargo, N. D. (licensed in North Dakota in 1905); aged 57; died, October 15, in a hospital at Moorhead, Minn., of heart disease.

Walter Emmett Jackson, Kansas City, Mo.; Rush Medical College, Chicago, 1895; aged 64; died, October 24, of bronchopneumonia and empyema.

Thomas J. Bond, Tahlequah, Okla.; Arkansas Industrial University Medical Department, Little Rock, 1895; aged 82; died, August 23, of carcinoma.

Robert C. Liddon, Corinth, Miss.; Maryland Medical College, Baltimore, 1900; formerly bank president; aged 55; died, October 13, of heart disease.

Howard W. Quirk, Ashtabula, Ohio; Western Reserve University Medical Department, Cleveland, 1882; aged 75; died, recently, of arteriosclerosis.

William Archibald Bolling, Lexington, Ky.; University of Louisville School of Medicine, 1891; aged 67; died, October 23, of angina pectoris.

Clive Charles McCullough, New York; Albany (N. Y.) Medical College, 1889; aged 69; died suddenly, November 11, of coronary thrombosis.

Gerhard Olaus Fortney ⊕ Zumbrota, Minn.; Rush Medical College, Chicago, 1906; aged 51; died, October 26, of carcinoma of the stomach.

Reinard Smith Keelor, Sanford, Fla.; Jefferson Medical College of Philadelphia, 1875; aged 79; died, October 29, of pneumonia and uremia.

Merwyn R. Bibb, Chicago; Harvey Medical College, Chicago, 1902; aged 58; died, October 24, of chronic nephritis and secondary anemia.

Almon Danforth Hodges ⊕ Boston; Harvard University Medical School, Boston, 1893; aged 69; died, October 17, of lobar pneumonia.

Alfred Richard Seebass ⊕ Denver; Denver College of Medicine, 1893; aged 66; died, November 8, of a self inflicted bullet wound.

Richard Garrison, Toms River, N. J.; Baltimore University School of Medicine, 1901; aged 75; died, October 14, of heart disease.

T. B. Gassaway, Bartlett, Tenn.; Memphis (Tenn.) Hospital Medical College, 1902; aged 54; died, October 25, of heart disease.

William Perry Clay ⊕ Convoy, Ohio; Starling Medical College, Columbus, 1896; aged 70; died, November 4, of carcinoma.

Hiram S. Smith ⊕ Black Diamond, Wash.; Detroit College of Medicine, 1898; aged 65; died, October 10, of heart disease.

Wilson G. Stephens, Catawba, Ohio; Eclectic Medical Institute, Cincinnati, 1889; aged 71; died, October 21, of heart disease.

Charles Arnold Wyndham, Lisbon, Maine; Medical School of Maine, Portland, 1907; aged 52; hanged himself, September 23.

Robert Garrett Lee Lumpkin, Baltimore; Baltimore Medical College, 1892; aged 63; hanged himself, October 8.

J. E. Hawkins, Lexington, Ky.; Louisville Medical College, 1872; aged 81; died, October 2, of coronary occlusion.

Simeon Blakeney, Waldron, Ark. (licensed in Arkansas in 1905); aged 81; died, October 26, of chronic myocarditis.

James S. Hibbard ⊕ Wichita, Kan.; Kansas City Medical College, 1900; aged 61; died, October 17, of heart disease.

Harry G. Gould, McKinney, Texas; Fort Wayne (Ind.) College of Medicine, 1884; aged 71; died, recently.

Bureau of Investigation

AARON W. RAFFELSON—IMPOSTOR

A Shrewd Swindler Who Poses as a Physician

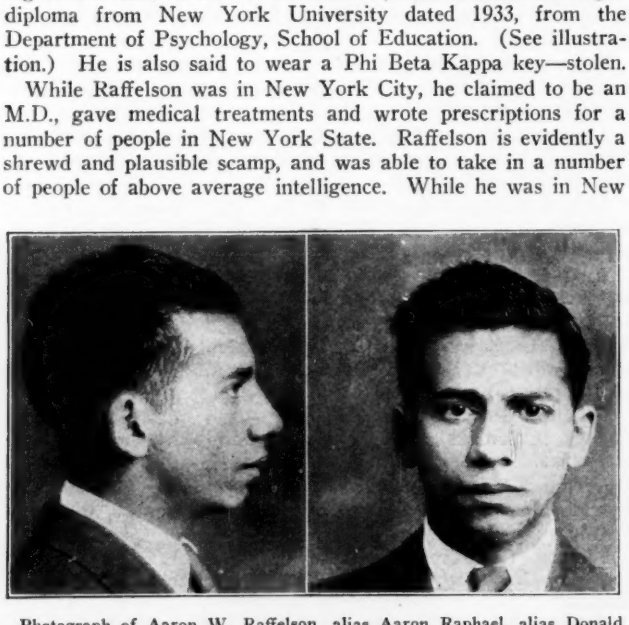
A man who calls himself, variously, Aaron W. Raffelson, Donald Clinton Raphael, Aaron Ralphael, Aaron Wolf, C. S. Julian and others, is now going about the country posing as a physician, particularly as a psychiatrist, and swindling medical men and others. According to information received from state officials in New York and police officials in Santa Fe, N. M., Raffelson is about 5 feet 5½ inches tall, aged about 23 but looks older, weighs 130 pounds, is slim and wiry in build, sometimes wears his hair bright red and other times black, has dark brown eyes, a swarthy complexion, at times wears a small mustache, and invariably goes bare-headed. He has a marked acne of the face. He speaks English fluently, also German and Yiddish.

Accompanying this article is a photograph of this impostor taken Dec. 11, 1930, by the Police Department of the City of New York at the time that he was arrested for forgery. His number in the New York City police records is B-87593. His fingerprint class is $\frac{9 \quad U}{21 \quad Ra \quad 14}$

After his arrest for forgery in 1930, Raffelson was discharged and placed on probation in the custody of the complainant. At the time Raffelson was employed by the University Settlement Society. He reported to the Society for a while and made part restitution. The Society has not seen or heard from him in the past two years.

Raffelson misuses medical certificate No. 16534 issued by the State of New York. According to the New York officials, this certificate was stolen from a woman physician of New York City. Raffelson replaced the physician's name with one of the names that he uses, Aaron Warren Raphael. According to the same source of information, Raffelson has a forged diploma from New York University dated 1933, from the Department of Psychology, School of Education. (See illustration.) He is also said to wear a Phi Beta Kappa key—stolen.

While Raffelson was in New York City, he claimed to be an M.D., gave medical treatments and wrote prescriptions for a number of people in New York State. Raffelson is evidently a shrewd and plausible scamp, and was able to take in a number of people of above average intelligence. While he was in New York he is said to have claimed to be a teacher at New York University, University and Bellevue Hospital Medical College, and claimed, also, to be an assistant state medical examiner. Both statements, of course, were utterly false. He has also claimed to be a graduate of the University of Oregon Medical School and the State University of Iowa College of Medicine and to have served as intern in Bellevue Hospital and to have been a research worker at the Rockefeller Foundation. All of these claims are false.



Photograph of Aaron W. Raffelson, alias Aaron Raphael, alias Donald Raphael, etc., etc. It was taken by the Police Department of the City of New York, Dec. 11, 1930.

Getting wind of the fact that the New York officials were about to close in on him, Raffelson left that city and went to Santa Fe, N. M., in April, 1934. By a shrewd move on the part of Raffelson, he was able to get a letter of introduction from a gentleman of high standing in New York. As soon as he reached Santa Fe a credit organization of that city began checking up with their correspondent in New York, who reported that Raffelson's credit accounts there had been paid satisfactorily (with money, it appears, that he had obtained by swindling other New Yorkers). Santa Fe is not a large city, and it was not long before Raffelson's tendency to be obtrusive made him rather well known. He spoke on psychiatry before local civic clubs, and he was also said to have paid marked attention to a young woman of that city and, indeed, was "cutting quite a large swath socially." When suitable occasions presented themselves, he would flash a badge which he claimed was a police badge from the City of New York. It was, however, merely an ambulance driver's badge.

THE TRUSTEES OF NEW YORK UNIVERSITY
IN THE CITY OF NEW YORK
TO ALL PERSONS TO WHOM THESE PRESENTS MAY COME GREETING
BE IT KNOWN THAT
Aaron Warren Raphael
HAVING COMPLETED THE STUDIES AND SATISFIED THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
HAS ACCORDINGLY BEEN ADMITTED TO THAT DEGREE WITH ALL THE RIGHTS PRIVILEGES AND IMMUNITIES THEREUNTO APPERTAINING
IN WITNESS WHEREOF WE HAVE CAUSED THIS DIPLOMA TO BE SIGNED BY THE CHANCELLOR OF THE UNIVERSITY AND BY THE DEAN OF THE SCHOOL OF EDUCATION PHILOSOPHY PSYCHOLOGY AND PEDAGOGY AND OUR CORPORATE SEAL TO BE HERETO AFFIXED IN THE CITY OF NEW YORK ON THE TWENTY SECOND DAY OF MARCH IN THE YEAR OF OUR LORD ONE THOUSAND NINE HUNDRED AND THIRTY THREE
DEAN
CHANCELLOR

Greatly reduced photographic facsimile of a "diploma" said to have been forged by Raffelson and purporting to have been issued by New York University. Its crudity and falsity is apparent.

On September 4 a murder was committed in Santa Fe. Raffelson immediately jumped into the investigation of the crime with a local detective. At the postmortem he was said to have testified under oath that he was a practicing physician and that he had assisted in conducting an autopsy on the deceased.

Detective H. C. Martin of the District Attorney's Office at Santa Fe, N. M., reports that the impostor is a fast talker, intelligent, and is likely to frequent the best hotels. Raffelson is said to claim that his father's estate in Oregon is being probated and that he (Raffelson) has substantial prospects therefrom. When last seen Raffelson wore a dark blue suit, white shirt with collar attached. He is also said to carry a 32-25 automatic in holster, both pistol and holster stolen while in Santa Fe.

On the morning of September 16 Raffelson is reported to have gone to a Santa Fe garage, where he deposited a worthless check and hired an automobile for the claimed purpose of driving to Portland, Ore. Instead of heading northwest, however, he went south to the Mexican border and five days later the car was recovered in a garage at El Paso, Texas, where Raffelson had left it. When he left Santa Fe, he had cashed checks aggregating almost a thousand dollars, one drawn on a bank that doesn't exist and all made out to Aaron W. Raphael by some non-existent individual. It appears that seven warrants have been sworn out against him in Santa Fe, charging him with swindling, forgery, illegal practice of medicine, obtaining money under false pretenses, larceny by bailee, and other charges.

Correspondence

EARLY REFERENCES TO PHYSICAL ALLERGY

To the Editor.—Under current comment, September 29, you discussed the importance of physical allergy and mentioned a few old references. Although you make no claim that these are the oldest references on the subject, Dr. Richard L. Sutton Jr. in a communication, October 27, corrects you with the statement that earlier reports of physical allergy are available and he cites articles published in 1883, 1881 and 1875.

The references which Dr. Sutton cites are still not the oldest. For example, Blachez (*Bull. Soc. méd. d. hôp. de Paris* **3**:262, 1872) recounts an instance of angioneurotic swellings due to exposure to cold water and to cold air or to the eating of ice. Behier (*ibid.* **3**:262, 1866) describes his own case of urticaria brought on by cold water. Bourdon (*ibid.* **3**:259, 1866) tells of asthma due to cold.

SAMUEL M. FEINBERG, M.D., Chicago.

MORTALITY AND MORBIDITY STATISTICS

To the Editor:—I should like to call attention to a common fallacy in the presentation of mortality and morbidity statistics, which is illustrated again by an article by Grulee, Sanford and Herron on breast and artificial feeding in THE JOURNAL, September 8. The fallacy consists in reporting the mortality for a group under the supervision of an organization and then comparing it with the mortality of the city or state or nation as a whole.

In this article, for instance, it is stated that the mortality for the group under the care of the Infant Welfare Society of Chicago was 11.1, which was less than one fourth of the infant mortality of the same region. Now the infant mortality of the same region is made up of all the deaths of infants from the very moment of birth. The mortality of the group under the supervision of the Infant Welfare Society is made up obviously of only those infants who came under its supervision. In a communication from Dr. Grulee I learned that none of these children came under the care of the society earlier than the third week and all of them were not under its care until the second month. It is perfectly obvious therefore that, since from one half to two thirds of all the deaths among infants occurs in the first month of life, it is entirely incorrect to compare one group, in which not one of the infants was under 3 weeks of age, with another group that has to assume the responsibility for all deaths occurring in the first three weeks.

A second fallacy is found in comparing groups with different racial distribution. In chart 1 the authors indicate the racial distribution of the people in the neighborhoods. From experience with infant welfare work it is reasonable to believe that the attendance at the baby stations was not exactly in a similar proportion as the racial groups which existed in the neighborhoods. It is well known that Italian and Russian mothers are quicker to take advantage of all sorts of medical and nursing service, guidance and advice. So one would be inclined to believe that a higher percentage of babies of Russian and Italian mothers attends the baby stations than was found in the neighborhoods. Furthermore, the neonatal rate and the infant mortality rate are much lower among infants of Italian and Russian mothers. One finds, then, in this fact of different distribution of racial groups a constant error in the comparison made by organizations with the community at large.

At the Montreal session of the American Public Health Association in September 1931, I had occasion to bring to light similar fallacies in the reports of organizations carrying on prenatal work. It is unfortunate that more attention is not paid to some of these well known factors in statistical reports. It may be that even with proper corrections Dr. Grulee and his co-workers may be able to prove statistically what most of us would like to believe—that morbidity and mortality are lowest in breast-fed babies and highest in bottle-fed infants. But in the presence of such statistical errors as I have indicated, the case cannot be considered proved.

JULIUS LEVY, M.D., Newark, N. J.
Director, Division of Child Hygiene, City of Newark Department of Health.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SENSITIZATION TO NEOARSPHENAMINE

To the Editor:—Please outline for me a treatment for a woman about 27 years of age who has had a severe cough and bloody sputum for two years. About one year ago I made a diagnosis of bronchial spirochetosis and advised the doctor who had her in charge to give her neoarsphenamine. He did this and after four or five doses she developed a marked dermatitis. I then suggested to him that he give her a saturated solution of potassium iodide after the dermatitis subsided. Then another dose of neoarsphenamine was given in a 10 per cent solution of sodium thiosulphate. The dermatitis immediately returned. She has a good appetite but continues to lose weight and continues to have a productive cough with occasional bloody sputum. Please advise treatment. Please omit name when publishing. M.D., Texas.

ANSWER.—Most of the articles on bronchopulmonary spirochetosis dismiss treatment by reference to the great efficacy of arsphenamine or its modifications. There are a few reports, however, of cases in which arsphenamine derivatives failed to give satisfaction or, as in the case cited, were out of the question because of sensitization of the patient. The prognosis of chronic spirochetosis is not good. Harper (in discussion of Davis, D., and Harper, E. C.: Acute Pneumonitis Due to Infection by Vincent's Organisms, *Virginia M. Monthly* **58**: 95 [May] 1931) quotes Castellani, the originator of modern interest in this disease, to the effect that cases of bronchopulmonary spirochetosis of more than six months' standing cannot be cured.

In any mild sensitization to neoarsphenamine it is justifiable to try minute doses of other arsphenamine derivatives, sulpharsphenamine or silver arsphenamine for example. Sometimes they will prove helpful. In most cases, however, the patient will react unfavorably to them also.

Inorganic forms of arsenic may be used. Castellani recommends solution of potassium arsenite by mouth or sodium cacodylate subcutaneously. Recently trivalent organic arsenic in the form of acetarsone (stovarsol) or the methenamine derivative of meta-amino-para-oxyphenol-arsenic acid has proved of great value in syphilis and might be helpful in this case if tolerated by the patient. One fourth of a 0.25 Gm. tablet might be given and, if there is no untoward reaction, a full tablet. If that was well borne, the regular plan of treatment could be tried, one tablet the first day, two the second, and three the third day, the dosage for the entire day being given at once on an empty stomach. This is sufficient for one week, to be repeated each week for eight weeks. Before the treatment is begun, an examination of the eyegrounds and the visual fields, as is the rule for tryparsamide, is recommended. The other precautions, frequent examination of the urine for casts and albumin and careful supervision of the general condition of the patient, must be observed.

Many other drugs have been used with more or less success. A bismuth compound alone or as an adjuvant to the arsphenamines has been given favorable mention; antimony and potassium tartrate was recommended by Castellani; emetine has been helpful in a number of cases.

From Argentina comes a report (Denis, R.; Bares, F. J., and Araóz, J. D.: Chloroform Therapy of Bronchial Spirochetosis of Castellani, *Prensa méd. argent.* **20**:2005 [Sept. 20] 1933) of a case resistant to many forms of therapy which yielded to chloroform inhalation as for anesthesia. The first dose was 10 Gm. given in twenty-five minutes. The second

attempt a week later was a failure, because of spasm of the larynx. On the third attempt, seventeen days after the first, 5 Gm. of chloroform was given in thirty minutes and three more such doses were then administered at intervals of three days. Following the last treatment the spirochetes disappeared from the sputum and had not returned at the last examination five months later.

With any form of treatment, the possibility of a double infection with tuberculosis must be kept in mind, sometimes the spirochetosis engrafted on an old tuberculous infection, sometimes the reverse. After apparent cure, the cases should be kept under observation for a long time, as recurrence is common.

INCUBATION PERIOD IN RABIES

To the Editor:—In your answer to the inquiry in THE JOURNAL, July 21, on the incubation period of rabies in dogs, I notice that you say "The average period of incubation of rabies in the dog is said to be from twenty-one to forty days." I have been instructed by the director of the hygienic laboratory with which I am associated to observe carefully for ten days any dog that has caused an abrasion on the skin of any person, and if at the end of ten days the dog is in good health I can reassure the person that there is no danger of rabies developing from the abrasion. It is understood that the abrasion may be from the teeth or claws. The answer seems inconsistent with the advice I have obtained and the same advice I have given my patients. I have been observing this rule for a number of years and have not had any patient develop hydrophobia. Please omit name.

M.D., South Carolina.

ANSWER.—In the statement above no account is taken of the time when the dog himself was bitten and might have been infected. Obviously the incubation period is the time from infection until definite symptoms of rabies appear. Ten days or so after a suspected dog has bitten a human being does not under any circumstances constitute the incubation of rabies in the dog.

Rosenau (Preventive Medicine and Hygiene, New York and London, D. Appleton & Co., 1916, p. 40) states that in general the period of incubation of rabies varies from fourteen days to a year or more and gives the average period as follows: "man, 40 days; dogs, 21 to 40 days; horses, 28 to 56 days; cows, 28 to 56 days; pigs, 14 to 21 days; goats and sheep, 21 to 28 days; birds, 14 to 40 days."

Veranus A. Moore (The Pathology and Differential Diagnosis of Infectious Diseases of Animals, New York, Macmillan Company, 1916, p. 390) makes almost the same statement as Rosenau and credits the information to Ravenel. Moore also gives the following table of the period of incubation in 144 cases of rabies in the dog as determined by Peuch:

Period of Incubation of Rabies in the Dog

Number of Days of Incubation	Number of Cases	Per Cent
5 to 10	3	2.08
10 to 15	8	5.55
15 to 20	13	9.03
20 to 25	25	17.36
25 to 30	13	9.03
30 to 35	25	17.36
35 to 40	6	4.17
40 to 45	11	7.64
45 to 50	9	6.25
50 to 55	4	2.78
55 to 60	2	1.39
60 to 65	7	4.86
65 to 70	1	.69
70 to 75	5	3.47
80 to 90	7	4.86
100 to 120	1	.69
Total	144	

Kolmer (A Practical Text-Book of Infection, Immunity and Biologic Therapy, Philadelphia & London, W. B. Saunders Company, 1934, p. 785) quotes Reichel (*American Veterinary Review,* January 1911) as giving the incubation period of rabies as follows:

Man, fourteen to ninety days.
Dogs, fourteen to sixty days.
Cats, fourteen to sixty days.
Cows, fourteen to eighty days.
Horses, twenty-one to ninety days.
Swine, sheep and goats, twenty-one to sixty days.
Birds, fourteen to sixty days.
Rabbits, fourteen to ninety days.
Guinea-pigs, eight to eighty days.

Special attention is directed to the great variation in the incubation of rabies in the dog because of the important rôle of that animal in human rabies. Variation in the incubation of rabies in general may depend on the site and character of the wound, on the amount and virulence of the virus introduced, and on other factors. Bites about the face and fingers are more dangerous than bites in the back and lower extremities, and deep, lacerated wounds are always more dangerous than the superficial.

TANNIC ACID IN BURNS

To the Editor:—Please give me your opinion of the use of tannic acid in burns. Would it be safe and proper to use it in solution in case of burns? Tell me what you can as to its use and the best way to use it. Please omit name.

M.D., Iowa.

ANSWER.—Since Davidson in 1925 introduced tannic acid as a therapeutic measure in the treatment of burns, it has been generally accepted as the best method of treating the wound if the patient is seen within the first forty-eight or seventy-two hours after the injury.

Following the infliction of a burn, the patient's general condition should receive first attention. If the patient is in shock, measures to relieve pain, restore external heat and supply fluid should be instituted immediately. If no shock is present or after the patient has responded to treatment, the wound should receive attention. Clothing and débris of various kinds should be carefully removed and loose pieces of tissue carefully lifted off. The surface should then be sprayed with tannic acid solution, which should be freshly prepared. Davidson used a 2.5 per cent aqueous solution, but most surgeons now believe that a 5 per cent aqueous solution is the most satisfactory. Modification of the solution so that it is neutral or slightly alkaline has certain advantages. Twenty-five grams of tannic acid and 4 Gm. of sodium carbonate added to 500 cc. of water will give a neutral 5 per cent solution. The spraying should be done every fifteen minutes until a firm mahogany-brown membrane is formed. Usually this occurs in about twelve or eighteen hours. If wet dressings are used they should be saturated at regular intervals with tannic acid solution, and a small window can be cut through the dressing to determine whether or not tanning has taken place. When tanning is completed, the dressing can be removed. In very extensive burns the patient may be immersed in a tub containing tannic acid solution. When this method of treatment is used the clothing can be removed after immersion and the solution should be changed as often as necessary to keep it clean. After the area is thoroughly tanned, no dressing is necessary over the burned area. The margins of the wound should be carefully watched and any blebs that form should be opened and painted with an antiseptic solution. A warm air blower should be used over the entire area at four hourly intervals for several days after tanning in order to keep the crust thoroughly dry. It is not necessary to use a blower if the patient is kept under an electric light cradle and the temperature of the air under the cradle is maintained at about 100 F. If after four or five days symptoms of infection appear, the tanned membrane should be carefully inspected and any fluctuant or soft areas should be incised. If infection is present, wet dressings of 5 per cent sodium bicarbonate should be applied over the crust after removal of all the loose membrane over the infected areas. Wet dressings facilitate removal of the crust. If no infection is present, the crust can be allowed to remain until it gradually curls off the healing surface.

This method has the advantage of relieving pain and preventing loss of fluid from the body. The crust acts as an impervious membrane, which prevents contamination of the wound and facilitates the easy handling of patients. Tissues that are destroyed by heat are fixed in the tanning process and in this way rendered inert.

INDUSTRIAL HAZARDS IN WATER SOFTENER MANUFACTURE

To the Editor:—I have a patient who is employed by a railroad in its water softening plant, which position he has held for eleven years. During the past two years he has developed a bronchitis and becomes at times asthmatic. A cardiac, renal or tuberculosis origin has been ruled out. He handles large amounts of lime, soda ash and sodium aluminate and breathes a great deal of the dust. There is no system of ventilation or any kind of protection for the men in this plant and I feel sure that his bronchitis is occupational. Kindly answer the following questions: 1. Is there any kind of a mask that can be worn for protection? 2. Is there a state law requiring ventilation of a water softening plant? 3. What is the recognized treatment of these chronic bronchitis cases due to inhalation of lime dust? Please omit name.

M.D., Illinois.

ANSWER.—Water softening with soda ash, lime and similar materials is an intermittent operation involving trivial exposure to dusts compared with such work as the manufacture of lime or soda ash. Both of these dusts are irritants, but extensive observations as to the causation of a pneumonoconiosis from their action has established practically no evidence of increased fibrosis from soda ash and from lime or limestone only when the exposure has been gross and prolonged. A roentgen examination will establish the presence or absence of excessive amounts of pulmonary fibrosis such as may result from the action of some dusts. An occupational bronchitis is a possi-

bility, but exact proof can be established only with difficulty. Previous employments in dusty trades may have some bearing on the present condition. As to the specific questions appearing in the query:

1. Yes. A number of respirators are available, such as for one example the Willson No. 3 bag type.

2. No state is known to possess a law peculiarly directed to water softeners, but most states have blanket provisions requiring the rectification of any serious hazard in industry.

3. Apart from the usual treatment of bronchitis, the only special feature connected with an occupational bronchitis is the prevention of further exposure. It may prove to be necessary to remove this worker to other forms of employment, though the wearing of a respirator may suffice.

TREATMENT OF GONORRHEA IN WOMEN

To the Editor:—Can you give me any concrete information on the use of concentrated fat free milk and "manganese butyrate with benzyl alcohol 0.6 per cent" in chronic gonorrhea in the female? Please omit name and address.

M.D., Wisconsin.

ANSWER.—Injections of milk for the treatment of chronic gonorrhea in women have been used for a number of years by many gynecologists. Practically all who use this form of therapy have found it helpful. The injections produce a leukocytosis and build up the patient's general resistance. The pain and tenderness usually associated with chronic gonorrhea are quickly relieved and the inflammatory processes rapidly diminish. In some instances, operations are made unnecessary because of the milk injections. If milk is administered before operation, the latter is simplified in a fair proportion of cases. Furthermore, these injections permit more conservatism when an operation is necessary. The injections are given intramuscularly, and fresh sterilized milk is as good as commercial preparations, if not better. It is best to give only 3 cc. at the initial dose, then increase to 5 cc. and finally to 10 cc. These injections should be given twice a week until exudates diminish in size, pain and tenderness subside, and the patient's general health has improved. There is rarely any untoward reaction from the injections either locally or generally. More information on milk injections in chronic gonorrhea may be found in the following articles:

Gellhorn, George: Milk Injections for Pelvic Infections in Women, *New Orleans M. & S. J.* **78**: 557 (March) 1926.

Watkins, R. E.: Milk Injections in the Treatment of Pelvic Inflammatory Disease, *Northwest Med.* **28**: 70 (Feb.) 1929.

Greene, E. H.: The Effects of Milk Injections in Chronic Pelvic Inflammatory Disease, *South. M. J.* **26**: 443 (May) 1933.

Manganese butyrate is rarely used for therapeutic purposes. No one has reported on its use in chronic gonorrhea in women and, judging from the present knowledge of this substance, it should not be employed as a medical remedy. It does not stand accepted by the Council on Pharmacy and Chemistry.

ALOPECIA AREATA

To the Editor:—I wish to submit this case for your consideration: I have been treating a girl, aged 11 years, for four months for alopecia areata. Her hair has been falling out over a period of fourteen months. She has had treatment for seven months, consisting of ultraviolet exposure once weekly. Additional treatment consisted of thyroid gland tabloid, one tenth grain, four to six daily for one month. Vitamin pearls, three daily for five months, applications of cantharides, olive oil, mange cure, and marrow oil to the scalp have had no appreciable result. The girl is 64 inches (162.6 cm.) tall, weighs 123 pounds (56 Kg.) and has perfect teeth, a clear skin and good health. Her menstrual period began at the age of 10 years 6 months. The hair comes in but does not grow strong and falls out. She has had three growths of hair to date. "Euresol" has been suggested.

H. L. RUDERMAN, M.D., Brooklyn.

ANSWER.—It is difficult to evaluate results of treatment of alopecia areata because of the great variability of the course of the disease, as well as of the response or lack of response of individual cases to various means of treatment. A case may defy all known methods of management and then, apparently spontaneously, clear up quite suddenly.

Because of the not infrequent association between a patchy alopecia and syphilis, either acquired or congenital, the possibility of this patient being syphilitic should be ruled out. If this is done and examination of the affected areas shows no scarring or atrophy such as might follow certain of the alopecia producing dermatoses and the extent of the involvement is not too great, the ultimate prognosis with the type of treatment used so far would probably be good. The youth of the patient, the fact that there has been new growth several times even though not strong or permanent, and the fact that the disease has been present only slightly over a year all point in this direction.

The general symptomatic and tonic treatment is important and this seems to have been well taken care of in this case. If the patient is particularly depressed or self conscious as a result of the affliction, attempts should be made to cheer her, which, as the prognosis is relatively good, seems justified.

Local stimulating preparations are usually indicated. There is a great variety of these and several have already been used in this case. Tricresol in 50 to 100 per cent strength might be applied with caution by the physician, so as to produce slight vesication in the affected areas every two weeks or so. Combined with this, a 5 per cent sulphur ointment might be used over the scalp in general one night a week, the hair being washed the next morning, and a lotion applied with a medicine dropper three times a week between applications of the ointment. The lotion might contain resorcinol monoacetate and castor oil in the following proportions: castor oil 4 cc., resorcin monoacetate 8 cc., spirit of formic acid 30 cc., and sufficient 90 per cent alcohol to make 240 cc.

PROPHYLAXIS AGAINST REPEATED PNEUMONIA

To the Editor:—A boy, aged 13, has had pneumonia five times. The physician who treated the first four attacks is not living. The last attack was treated by me last winter. In the last attack, which terminated in ten days by rather rapid lysis, only the left lower lobe was involved. The last attack was much more severe than others. The temperature ranged from 105 to 106.6 F. for five days. The boy's weight is normal; he is very active and is not fat. He is not a "delicate" child but very light complexioned and is no more prone to other diseases than other children. The tonsils are out. The throat and nose are in good condition. There is no chronic disease of the upper respiratory tract. The tuberculin test is negative. Chest roentgenograms taken several years ago are negative. The attacks always start with coryza and pharyngitis. The patient is always put to bed when he has a cold. Pneumonia develops while he is in bed treating the cold. He gets cod liver oil every fall, winter and spring, and fresh fruits daily. Possibly he does not eat sufficient meat; otherwise the diet is well balanced. Hygiene of the home is beyond reproach. His home is steam heated. The boy is always well dressed for winter weather. Cold vaccines were tried by the former physician and no results were noted. He was advised by the former physician that he would probably "outgrow" the susceptibility to pneumonia. The patient raised no sputum during the last attack. There is no history of sputum culture in the former attacks. Do you advise trying stock prophylactic vaccines in such cases? Please omit name and town.

M.D., North Carolina.

ANSWER.—An attempt should be made to immunize this patient. However, it should be borne in mind that certain individuals are refractory toward active immunization against pneumococcic infection. Insufficient knowledge of the relative activity of the various vaccines makes it impossible to advise any one kind. The important point is the study of the blood of the patient before and two weeks after the use of the vaccine to prove its effectiveness. The mouse protection test is the most sensitive. If antibodies are found in the blood, it would be advisable to vaccinate the boy every six months in the hope of finally producing a state of resistance that will reduce his apparent hypersusceptibility to pneumococcic infection. The important issue is the use of a vaccine that actually stimulates antibody production in the patient.

GRÄFENBURG RING FOR CONTRACEPTION

To the Editor:—I have been hearing rumors about an intra-uterine contraceptive device that was developed in Germany and bears the title of Gräfenburg ring. I understand that it is inserted into the uterine cavity and that it is highly efficient. I should like to find out more about this ring, the dangers that might attend its use, and any other contraindications. Of course any operation that demands dilation of the cervix and the introduction of a foreign body into the uterus always is dangerous because of the possibility of infection. What is the danger of a malignant condition developing? Is there any danger of sterility following the use of the ring for several years if a young woman uses it and then decides that she wishes to have a child? Please omit name and locality.

M.D., Hawaii.

ANSWER.—The Gräfenburg ring has been in use in Germany for several years and considerable data are available concerning its usefulness as a contraceptic device, as well as the dangers and the failures following its use.

Three types of ring have been utilized: a star of silkworm gut, a circle of silkworm gut, and a spiral silver ring. The ring is inserted into the uterine cavity after dilation of the cervix to number 5 or 6 Hegar, and the location of the ring is checked up from time to time by means of roentgen examination. Bleeding or pain necessitates its removal, which is more difficult than introduction. On the other hand, the ring may slip out accidentally or may become displaced. Pregnancy occurs rarely, and ectopic pregnancy is in no way prevented by the ring. According to Robert Meyer, who examined the endometrium in fifteen patients who wore the ring one year or

longer, no inflammatory change is caused by the presence of the ring.

Stefko and Lourié have shown that, when pregnancy occurs with the ring in the uterus, damage to the embryo occurs, resulting in deformed children. Leunbach of Copenhagen at first reported favorably on the use of the silver Gräfenburg ring but in 1930 withdrew his endorsement; in 12 per cent of his patients, bleeding and pain required removal of the ring.

Gräfenburg had ninety-nine bad results in 1,081 cases, but these were less in the case of the silver ring than when silkworm gut was used. There were thirty-one pregnancies in his series, four of which occurred when the ring was in the uterus and twenty-seven when the ring was lost. Inflammation resulted in seventeen cases. Replacements had to be made in 408 cases from one to eight times—a total of 1,390 replacements. No mention is made in the literature of malignant changes resulting from the use of these intra-uterine devices. In cases in which inflammation occurs, one would expect sterility as a sequel. For a complete discussion of contraceptive devices, including the Gräfenburg ring, the correspondent is referred to Dickinson and Bryant's book "Control of Conception," Baltimore, Williams and Wilkins, 1931.

TUCKER'S ASTHMA SPECIFIC

To the Editor:—I was called recently to see a patient who had been taking Dr. Tucker's Asthma Specific for asthma and hay fever. She had been using it almost continuously since about August 20, when her first symptoms were noticeable. When I was called she was in a state of unconsciousness, the pulse was weak and thready and she was in profound dyspnea. In spite of stimulation her condition gradually became worse and she died in less than two hours. At the time I was called, the bottle with the label could not be found; but it has now been found and it is labeled as containing 5 grains of cocaine to the ounce. I am strongly of the opinion that the continuous and prolonged use of such a strong solution of cocaine was a very important factor in the sudden heart symptoms, for the patient had at least not had enough trouble with her heart to cause her to consult a physician for it. Please give me your opinion with regard to this phase of this so-called asthma specific.

J. M. STEVENSON, M.D., Brooksville, Ky.

ANSWER.—The data submitted are insufficient to pronounce the case reported as one of cocaine poisoning, though the possibility of this must be entertained. Discussions of this notorious nostrum may be found in THE JOURNAL, May 20 and Sept. 29, 1911, and Nov. 1, 1924. As THE JOURNAL has pointed out at various times in the past, the sale of this product violates both the Harrison Narcotic Act and the federal Food and Drugs Act. The manufacturers have claimed that, although the original product contains 5 grains of cocaine to the ounce, the stuff is kept in stock long enough to cause the other ingredients to hydrolyze the cocaine, with the result that when the stuff reaches the consumer most of the cocaine has disappeared —as such. The label, therefore, deliberately falsifies its composition, which should bring it within the purview of the federal Food and Drugs Act. Even if it contains no cocaine, it must obviously contain a derivative of cocaine, so that by its method of sale it violates the Harrison Narcotic Act.

LICHEN PLANUS IN AGED

To the Editor:—A man, aged 72, has a skin condition affecting his ankles particularly but at times his arms and back, which I have diagnosed as a hypertrophic lichen planus. I think there is no question as to the diagnosis, but all forms of treatment that I have tried have failed to give anything except temporary relief. I have used mercuric succinimide and mercuric salicylate in one-eighth to one-third grain (0.008 to 0.02 Gm.) doses intramuscularly twice weekly for three months. He has been given arsenic intramuscularly and orally. Locally I have used tar and also mercury ointments. I have applied full dosages of ultraviolet rays and of x-rays several times. There was marked temporary improvement at first following the use of all these measures but the eruption returns quickly in a few hours, sometimes with an extensive bright red papular eruption extending half way to the knees. The subjective symptoms are burning and gnawing. There is no itching. During the acute exacerbations there is some secretion of clear watery fluid from small vesicles, which form on the papules. When the condition is more quiescent it involves only the skin on the front and sides of the ankles proper. The affected skin is thickened and has a blue-violaceous color. Small white striae can be seen on the surface. The patient is becoming quite nervous about the condition. I have treated him for the past year with no apparent progress. Please advise as to present methods of treatment of this disease and your opinion as to how best to handle this particular case at this time. Would neoarsphenamine injections be of any probable value?

M.D., Kan.

ANSWER.—There is some question as to the diagnosis in this case. While the violaceous color and the chronicity suggest lichen planus, the acute exacerbations with vesiculation are not typical for that disease. They suggest rather some form of chronic eczema or perhaps lichen simplex.

The treatment of hypertrophic lichen planus is very difficult and at 72 years of age can easily be hopeless as to cure. Local treatment to reduce the burning sensation would seem to be indicated. The tars, menthol and phenol are the most useful of the standard drugs. Tars may cause furuncles if kept up too long. Phenol should not be used in strength greater than 1 per cent in ointments for fear of phenol gangrene. Camphor, menthol and chloral, from 5 to 20 per cent of each, can be used in alcohol as an anesthetic lotion.

Arsphenamine or neoarsphenamine is not particularly helpful in lichen planus and not justifiable at 72 years of age without a direct indication.

"HEART WORMS"

To the Editor:—In southern Florida it is conceded by dog owners that a majority of adult dogs are infested with so-called heart worms. I have seen at autopsy a heart cavity completely filled with adult worms (in the dog) that measured several inches long. A drop of blood under low power will show from one to twenty larvae that appear one-fourth inch long. They are very motile. Can you tell me what variety these filariae are? Is there any relation to Filaria bancrofti or Filaria sanguinis-hominis? Can they be transmitted to man? What mosquito transmits them? What is the incidence of Filaria infestion in man in southern states? The answer to these questions will be of much interest to local physicians, as we are frequently asked whether man is likely to be infested from this variety found so prevalently in dogs. Please omit name.

M.D., Florida.

ANSWER.—The worms found in the heart are undoubtedly the common heart worm Dirofilaria immitis, which is a filariid widely distributed in the warmer countries of the world and which occurs in the dog, cat and various wild carnivores. As it can be transmitted by a number of mosquitoes, it is difficult to name the chief carrier in Florida. The probability is that it is carried chiefly by Culex fatigans (quinquefasciatus) and Culex pipiens. Dirofilaria has never been found in man and there is no connection between it and human filariasis. With the exception of a few sporadic cases, the only endemic center of human filariasis (Filaria or Wuchereria bancrofti) in the United States is in Charleston, S. C. As far as is known, any human infections in Florida or the neighboring states would probably have originated in the Charleston area.

INNERVATION OF DENTAL PULP

To the Editor:—I wish to direct your attention to an error in a portion of the answer to the inquiry concerning the innervation of the dental pulp appearing in Queries and Minor Notes in THE JOURNAL, October 6, page 1092. From the author's statement it might be inferred that anesthesia of the third division of the fifth nerve may be obtained by a mandibular block. This is incorrect, as such a procedure would affect only the terminal branches anterior to the point of injection; namely, the inferior dental, lingual and mental branches of this nerve. The fact is that, in order to produce anesthesia of the third or mandibular division of the fifth nerve for surgical or therapeutic purposes, it is necessary to inject the solution near or into the foramen ovale located in the greater wing of the sphenoid bone where the nerve emerges from the cranial cavity.

This particular inquiry touches on a problem that puts to test the erudition and skill of the ablest operators from time to time. A much deeper anesthesia is needed and is often more difficult to obtain for pulp extirpation than for other even more extensive surgical treatment. This is especially true in patients of middle age, particularly when the two upper bicuspid and first molar teeth are involved. In these cases failure is due entirely to the inability of the anesthetic solution to pass through the dense and thick anterior cortical plate of the superior maxillary bone, under the surface of which is located the middle superior dental (alveolar) nerve, which innervates these teeth. In this type of case other methods must be employed to obtain anesthesia, and an intra-osseous block is one that gives satisfactory results. In certain other cases, when the pulp is already exposed, pressure anesthesia with procaine hydrochloride may be employed with equally good results.

EMIL L. AISON, D.D.S., Chicago.

ELECTROCARDIOGRAPHY IN PRACTICE

To the Editor:—Under Queries and Minor Notes in THE JOURNAL, September 29, you advised "M.D., Massachusetts," to install an electrocardiograph in the hospital in question and to charge a small fee for interpretation of each tracing, reimbursement for the investment to be dependent on a large volume of business. In your reply, I believe, you should have considered the cardiologist in the neighboring city who has invested in a similar machine and whose volume of business cannot be comparable with a hospital of 125 patients daily census. This cardiologist has had to spend considerable time and money for the knowledge to interpret such tracings. I believe that hospitals should not compete by reducing fees because of a greater volume of business available but should charge prevailing rates of private physicians in the community so as to avoid unfair competition. Emphasis should be made on the interpretation of the tracing rather than the mechanical factor. I hope this will be accepted as constructive criticism.

EMIL J. SUSSLIN, M.D., Bridgeport, Conn.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 7. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates).* New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, March 23. *Final oral and clinical examination (Group A and Group B candidates).* Atlantic City, N. J., June 10-11. Group B application lists close Feb. 23 and Group A application lists close May 10. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Philadelphia, June 10. *Application must be filed at least sixty days prior to date of examination.* Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: *Basic Science.* Tucson, Dec. 18. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, Jan. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 5. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 18. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 27-28. *Medical.* Washington, Jan. 14-15. Sec., Commission on Licensure, Dr. W. C. Fowler, 203 District Bldg., Washington.

IOWA: Des Moines, Jan. 3-5. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 11-12. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 4-6. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 6-8. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Regular.* Baltimore, Dec. 11-14. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 11-12. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 2-3. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 15-17. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Omaha, Jan. 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 3. Sec., Dr. Benj. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 1-4. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OHIO: Columbus, Dec. 3-6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Reciprocity.* Oklahoma City, Dec. 11. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

OREGON: Portland, Jan. 2-4. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 8-12. Sec., Board of Medical Education and Licensure, Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Jan. 3-4. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 15-16. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre.

TENNESSEE: Memphis, Dec. 20-21. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VIRGINIA: Richmond, Dec. 12-14. Sec., Dr. J. W. Preston, 28½ Franklin Rd., Roanoke.

WASHINGTON: *Basic Science.* Seattle, Jan. 10-11. *Medical.* Seattle, Jan. 14-16. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 15. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 8-10. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse.

Illinois June Examinations

Mr. Eugene R. Schwartz, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, June 26-30, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two hundred and twenty-three candidates were examined, 218 of whom passed and 5 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Chicago Medical School	(1931) 77, (1934) 75, 76, 77, 77, 77, 78, 79, 79, 79, 80, 81, 81, 82, 82, 82, 82, 83, 83, 84,* 84, 86, 87	(1931)	75,*
Loyola University School of Medicine	77, 80,* 80, 81, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 83, 84,* 84, 84, 84, 84, 84, 85,* 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 87, 88	(1934)	76,
Northwestern University Medical School	(1933) 81,* 83,* 85, 87, 88, 88, (1934) 81, 81, 81, 81, 81, 82,* 82, 83,* 83, 83, 84, 84, 84, 85, 86,* 86, 86, 88, 88	(1932)	81,
Rush Medical College	(1934) 77, 80, 81, 83,* 83, 83, 83, 83, 83, 84, 84, 84, 85, 85, 85, 86, 86, 87*	(1933)	81,
School of Medicine of the Division of the Biological Sciences		(1932) 87,* (1934) 82,	83,* 86
University of Illinois College of Medicine	83, 85, (1934) 76, 78, 78, 78, 78, 79, 79, 79, 79, 79, 80,* 80, 81,* 81, 81, 81, 81, 81, 81, 81, 81, 82,* 82,* 82,* 82, 82, 82, 82, 82, 83,* 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 87, 87, 87, 88, 88, 88, 88, 88, 90	(1933)	81,
St. Louis University School of Medicine		(1933)	77, 84*
Washington University School of Medicine		(1933)	79
Creighton University School of Medicine		(1933)	75
Hahnemann Medical College and Hosp. of Philadelphia		(1933)	80
Marquette University School of Medicine		(1932) 86, (1934)	80
University of Toronto Faculty of Medicine		(1931)	78
Medizinische Fakultät der Universität Wien		(1926)	82
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1927) 80,† (1928) 77,† (1929)	80
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1929)	79†
Universität Zürich Medizinische Fakultät		(1932)	80

School	FAILED	Year Grad.	Number Failed
Chicago Medical School	(1933, 2),	(1934)	3
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1932)†	1
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau, Germany		(1929)†	1

Twenty-four physicians passed the practical examination held in Chicago, June 28, for reciprocity and endorsement applicants. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1933)	Colorado
George Washington University School of Medicine		(1910)	California
Northwestern University Medical School		(1933)*	Ohio
University of Illinois College of Medicine	(1933) Oregon	(1932)*	Kansas,
State University of Iowa College of Medicine		(1932)	Iowa
University of Maryland School of Medicine and College of Physicians and Surgeons		(1931)	Maryland
University of Michigan Medical School		(1930)	Michigan
St. Louis University School of Medicine	(1931), (1933, 3),* (1933) Missouri	(1925),	
Washington University School of Medicine	(1932), (1933)* Missouri	(1930),*	
Ohio State University College of Medicine		(1931),* (1933)	Ohio
Jefferson Medical College of Philadelphia		(1930)	Penna.

School	PASSED	Year Grad.	Endorsement of
Northwestern University Medical School		(1933),* (1934, 2)	N. B. M. Ex.
Rush Medical College		(1929)	N. B. M. Ex.

* License has not been issued.
† Verification of graduation in process.

Nevada Reciprocity Report

Dr. Edward E. Hamer, secretary, Nevada State Board of Medical Examiners, reports 4 physicians licensed by reciprocity at the meeting held in Reno, Aug. 6, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Stanford University School of Medicine		(1933)	California
Rush Medical College		(1933)	California
Washington University School of Medicine		(1930)	Missouri
University of Oregon Medical School		(1924)	California

North Dakota July Report

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held in Grand Forks, July 3-6, 1934. Ten candidates were examined, all of whom passed. Two physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Georgetown University School of Medicine		(1932)	1
Northwestern University Medical School		(1933), (1934)	2
Rush Medical College		(1934)	1
State University of Iowa College of Medicine		(1925)	1
University of Michigan Medical School		(1933)	1
University of Minnesota Medical School		(1930), (1933), (1934)	3
Creighton University School of Medicine		(1933)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1933)	Illinois
University of Nebraska College of Medicine		(1931)	Kansas

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College		(1926)	N. B. M. Ex.

Book Notices

Atlas Fundus Oculi. By William Holland Wilmer, M.D., LL.D., ScD., Professor of Ophthalmology and Director of the Department of Ophthalmology of the Johns Hopkins University School of Medicine. Introduction by Warfield T. Longcope, M.D., Professor of Medicine and Director of the Department of Medicine of the Johns Hopkins School of Medicine. Cloth. Price, $35. Pp. 39, with 100 colored plates. New York: Macmillan Company, 1934.

The library of every student of ophthalmology should contain a copy of this work. Indeed, every one who uses the ophthalmoscope even occasionally can hardly fail to derive the utmost satisfaction from the color plates, which Annette S. Burgess has spent four years in producing. The first twenty depict normal animal and human fundi with the more frequently encountered congenital human anomalies. The last eighty set forth the pathologic changes of the human eye in most graphic fashion, from primary optic atrophy to bilateral metastatic carcinoma of the choroid before and after the use of radium. Concise but comprehensive descriptions, with brief histories, accompany each plate. Following the introductory pages the author presents an excellent monograph on ophthalmoscopic examination with valuable suggestions for the interpretation of color variations as regards race and complexion in optic nerve and retinal vessel changes. With the concluding words of Warfield T. Longcope's introduction, the book "may be regarded as a series of personal records selected with discretion and wisdom that comes with great experience, to illustrate the appearance of the fundus under normal conditions and in a great variety of pathological states. . . . It unfolds before our eyes one beautiful reproduction after another, each one of which depicts the changes of the fundus with a brilliancy and accuracy that cannot be surpassed." The work is a classic in the literature of modern ophthalmology.

La séroréaction biennorragique. Par Bertrand Rème. Paper. Price, 30 francs. Pp. 179. Paris: Masson & Cie, 1934.

This is a comprehensive review of the work on the complement fixation test in gonorrheal infections from 1906 to 1934. It contains abstracts from more than 300 papers published on this subject, only twenty of which were in French. Starting with the history of the test, Rème gives an exhaustive review of the technic, the serologic interpretations and the specificity of the reaction and ends with its practical value. After correlating the work done by the various authors, Rème concludes that, while more research work should be done on the complement fixation test, the test is reliable and of great value both as a diagnostic agent and in determining the question of cure. He deplores the fact that the test is so little understood and used by the medical profession. He also feels that where the test has proved unreliable the fault lies in the use of improperly prepared antigens and in faulty technic in standardizing the various reagents used in making the test. The book is written in simple French, and all persons interested in the complement fixation test in gonorrheal infections should obtain a copy.

The Elements of Experimental Embryology. By Julian S. Huxley, M.A., Honorary Lecturer in Experimental Zoology, King's College, London, and G. R. De Beer, M.A., D.Sc., Jenkinson Lecturer in Embryology, Oxford. Cloth. Price, $7. Pp. 514, with 221 illustrations. New York: Macmillan Company; Cambridge: University Press, 1934.

The need of new concepts capable of compassing the facts of natural science—in chemistry, in physics, and especially in biology—is generally recognized and increasingly insistent. In this book these eminent English thinkers seek to formulate as far as may be at present general rules and laws that are recognizable in one small field of biology; namely, the earlier stages of embryologic development. They limit their consideration to the biology of differentiation; that is, "the production of an organized whole with differentiated parts out of an entirely or relatively undifferentiated portion of living matter." Amphibian development is selected to exemplify the phenomena from which the principles are deduced. The development is followed descriptively and experimentally in these animals through the stages of beginning differentiation—through the earliest appearance of polarity, symmetry, gradient fields, special local fields, and so on. The attempts at explanation heretofore offered are briefly sketched: preformation, determinants, particulate inheritance, the "soul" of Aristotle and the "entelechy" of Driesch, and their inadequacy is shown. The new principles suggested substitute for the verbalism and vitalism of these older theories the "organizers" of Spemann and the "gradient fields" developed mainly by Child. The authors do not offer this formulation as a complete explanation. They hope only to give a "first degree of scientific explanation of the facts." As such it will be welcomed by all who realize the need for synthesis of new concepts in natural philosophy. A brief final chapter is devoted to a summary of the principles deduced, and a penultimate chapter is devoted to a consideration of the prefunctional period of development as contrasted with the functional period. The excellent index will be of great help to the student, who will find in this book one of the best reviews of a subject to which experimental embryology has made enormous additions in recent years and which is of prime importance in biologic philosophy. The book is dedicated to two great experimental embryologists, Spemann of Freiburg and Harrison of Yale.

Essentials of Infant Feeding and Paediatric Practice. By Henry P. Wright, B.A., M.D. Cloth. Price, $4.25. Pp. 212. London & New York: Oxford University Press, 1934.

In the small book the author presents modern teaching in a terse, practical manner "for the benefit of the trained nurse, the student of medicine and the general practitioner." He repeatedly refers to the work of numerous authorities. The first section (sixty-two pages) is devoted to general topics, as growth and development, physiology, hygiene, breast feeding, artificial feeding and stools in infancy. The second section (sixty-seven pages) deals with disturbances of nutrition, including failures to gain weight, vomiting, diarrhea, constipation, prematurity, rickets, tetany and scurvy. The third section (sixty-three pages) gives information on preventive measures, serums, isolation rules, diets, therapy, transfusion and laboratory tests. The book should appeal to "the student of medicine in a crowded curriculum, and the general practitioner in a strenuous life." In some places the text is too greatly abridged; in others there is rambling. In some respects the author is ultraconservative; in others relatively new measures and procedures are recommended. Under pyloric stenosis, for example, only surgery is mentioned as therapy. On page 148 one reads: "Add this to a pint (20 oz.)" (a pint is 16 ounces in the United States). Regarding scarlet fever antitoxin, he says: "Many firms have withdrawn their products from the market." His dosage of convalescent poliomyelitis serum is not adequate. No mention is made of enteritis, although bacillary dysentery and rules for its prevention are briefly discussed. The chief field of usefulness of this book will be as a work of handy reference.

Pubertad: Diario de una colegiala. Traducción directa del original francés por Paul Martin. Paper. Price, 5 pesetas. Pp. 246. Madrid: Javier Morata, 1934.

This is a psychoanalytic study of a diary written by a girl during the age of puberty. The behavior of girls toward persons of the opposite sex, their emotional reactions and their interpretation of love and nature, with vivid colors, as well as the instability of their character and love and other acts are explained by the development and evolution of love at that age. The book is of value for teachers and psychologists in understanding many details of the character and emotions of girls at this age.

The Twilight of Parenthood. By Enid Charles, M.A., Ph.D. Cloth. Price, $2.50. Pp. 226, with 7 illustrations. New York: W. W. Norton & Company, Inc., 1934.

The point of view of the book is stated to be that: "When prosperous classes of industrial nations, like other ruling castes in the past, have become the victims of their own ideology. In seeking to mitigate poverty by preventing the poor from reproducing, they have molded the destiny of a civilization which has lost the power to reproduce itself." Scientific and technical progress has disproved the Malthusian theory, but the growth of population is being restricted until the world is now faced with the "menace of underpopulation." The development of new mathematical technic in the field of vital statistics has shown that within each industrial era population tends to

follow a logistic curve approaching stability. Such an upper limit is not definitely fixed, since social changes may start a new curve from the upper limit of the present one. "The conclusion which emerges most clearly from our study is that the *laissez faire* economy is a biologically self-destructive arrangement of man's social life."

Medicolegal

Workmen's Compensation Acts: Refusal to Submit to Operation.—In the course of his employment, May 9, 1927, Gidley fractured a semilunar cartilage in his right knee joint. Permanent partial loss of use of the leg followed. He first sued his employer, under the Federal Employers' Liability Act, on the theory that at the time of the injury both he and the employer were engaged in interstate commerce. In 1931 the Supreme Court of Illinois held that the parties were engaged not in interstate commerce but in intrastate commerce, and the suit was dismissed. In the meantime Gidley protected his rights under the workmen's compensation act of Illinois by filing, May 9, 1928, with the industrial commission, a petition for compensation. No hearing was held on this petition until 1932, when an arbitrator awarded compensation based on 130 weeks temporary total disability and a 35 per cent total permanent loss of use of the right leg. The industrial commission affirmed the award with respect to the permanent loss of use but determined that the temporary total disability extended only for twenty-nine weeks and two days. The superior court, Cook County, however, affirmed the award as made by the arbitrator. The employer thereupon appealed to the Supreme Court of Illinois, which affirmed the judgment of the superior court, sustaining the arbitrator's award.

The employer contended that the limitation by the industrial commission of the duration of compensable temporary total disability was correct, asserting that the total disability in excess of twenty-nine weeks and two days was due to the workman's refusal to submit to an operation. All the medical witnesses, said the Supreme Court, agreed that the temporary total disability of 130 weeks was due to the fracture of the semilunar cartilage and that there is a feasible operation for the cure of that condition. They disagreed, however, as to the advisability of such an operation and the danger involved in it. Three physicians, testifying for the workman, believed that there was danger of an infection, which might have resulted in a permanently stiff knee. Only the medical witness testifying for the defendant seemed to belittle the danger. Furthermore, continued the court, the offer or demand by the employer that the workman submit to an operation was made, according to the evidence, Nov. 20, 1927, when there was nothing in the case pending before the industrial commission. Neither the employer nor the workman had then made application for adjustment of compensation. Consequently the employer had at that time no statutory authority to make the demand, nor was it the statutory duty of the workman to submit. It is for the industrial commission, not the employer, to determine whether or not an injured workman may be required to submit to an operation, but at that time not even the industrial commission could have entered an order requiring him to do so.

The only question of law involved, said the court, is whether the workman's conduct was so arbitrary and unreasonable that his continued disability can be said to have resulted from his own misconduct rather than from the original injury. On this issue, the employer had the burden of proof and all doubts must be resolved in favor of the workman. There was evidence that the workman, in refusing the operation, acted on the advice of his physicians. An operation might have cured his knee, but it might have made it much worse. There was no showing of bad faith, and the court could see no more reason for his following the advice of the employer's physicians than the advice of those physicians of his own choice. The court therefore could not say that the workman's conduct was such as to deprive him of his right to compensation.

For the reasons stated, the Supreme Court affirmed the award of the arbitrator.—*Gidley v. Industrial Commission (Ill.), 189 N. E. 881.*

Malpractice: Negligence Following Tonsillectomy.—The defendant-osteopath, Townsend, arranged for the performance of a tonsillectomy on the plaintiff's son, 8 years old, and undertook the postoperative care of the case. The operation was done by an osteopath from a nearby city, Hartsock, in the defendant's office. After the operation, about 10 o'clock in the morning, the patient remained in the office until 7 o'clock that evening, when he was taken to the home of an uncle, where he remained until he died on the following day. Hemorrhage followed the operation, and Hartsock, before he left the office about 12:30, gave a hypodermic injection, which he said was to coagulate the blood. The bleeding continued and was called to the attention of Townsend, who said it was all right. The patient vomited, however, irregularly, sometimes every hour and a half and sometimes less frequently, and the vomit each time contained red blood. About midnight the plaintiff, the patient's father, summoned the defendant, who administered another hypodermic injection. At 3:30 on the morning following the operation the plaintiff reported to the defendant the patient's condition. The defendant did not come to see the patient but advised the plaintiff to give the patient nourishment and promised to call in the morning. The bleeding continued through the night and was continuing at 8 o'clock the following morning, when the plaintiff went after the defendant and told him that he had better come right away and bring with him some one who knew more than he did. The defendant came, bringing with him his father, a doctor of medicine, who only advised the application of warmth and the giving of nourishment. Thereupon the plaintiff summoned a physician from a nearby town. That physician found the boy weak from loss of blood and still bleeding profusely. He advised the immediate administration of nourishment through the rectum and as soon as the necessary instruments could be procured, and after the arrival of Hartsock, who had operated in the first instance, two or three stitches were taken in the pillars of one tonsil and the hemorrhage stopped. The patient died, however, about 4 o'clock that afternoon.

The patient's father filed suit against the defendant-osteopath, Townsend, and against the nonresident operating osteopath, Hartsock. He was unable to get legal service on Hartsock, and the case therefore proceeded with Townsend as sole defendant. Damages were awarded in favor of the plaintiff and Townsend appealed to the Supreme Court of Kansas. Although the physician who was summoned by the plaintiff testified in his behalf, the defendant apparently sought to have the verdict of the trial court set aside because of the absence of expert testimony to support it. The Supreme Court pointed out, however, that results so pronounced as to be apparent and matters within the common knowledge of mankind may be testified to by any one familiar with the facts.

"It required no doctor to inform the jury," said the Supreme Court, "that when a surgical operation was had upon the throat and thereafter the patient spat up blood, that it was blood. The fact that the boy vomited, the frequency thereof, the testimony of the color, the effect on the child, were facts that any person of ordinary intelligence could discern, and evidently the jury saw fit to believe that the father vainly called the doctor about 3:30 in the morning, and a few hours later, believing the child was not being properly treated, called in another physician, who promptly saw to it that the boy was nourished, and assisted Dr. Hartsock in a second operation which stopped the bleeding. There was also the father's statement that defendant told him the boy died 'of tonsiline hemorrhage.' The plaintiff's evidence also showed that the defendant undertook the care of the boy following the operation; that he permitted the bleeding to continue, the giving of the hypodermic injection at midnight being all that was done to stop it; and that he made no effort to call Dr. Hartsock until the parents had called Dr. Newman. The above recited lay testimony, together with the medical testimony previously referred to, made a prima facie case, prevented a ruling favorable to the defendant on his demurrer, and precluded a directed verdict in his favor."

The judgment of the lower court, in favor of the plaintiff, was therefore affirmed.—*Flentie v. Townsend (Kan.), 30 P. (2d) 132.*

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, New York, Jan. 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.

American Association for the Study of Neoplastic Diseases, Dec. 27-29. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D.C., Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.

Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 8. Dr. W. C. Spain, 116 East 53d Street, New York, Secretary.

Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

Third Conference on Rheumatic Diseases

First Annual Meeting, held at Cleveland, June 11, 1934

The President, DR. ERNEST E. IRONS, Chicago, in the Chair

The New Association and Its Purposes

DR. ERNEST E. IRONS, Chicago: The need for extending the work so well begun by the American committee, and the necessity for better correlation of what is known of arthritis with what is done for the patient, convinced us of the desirability of this association. We hope that this organization will be an association of those interested in obtaining and promulgating a well rounded conception of the problem of the arthritides, so that rational methods of treatment may be available to the physicians in charge of the many thousands of sufferers from arthritis. It is hoped that we may now extend membership so that all parts of this country may be represented and the number of qualified participants in the work increased.

Another activity will be the encouraging of the organization of local groups of those especially interested in the study of arthritis to stimulate individual research and promote general interest in the dissemination of knowledge of the disease and its treatment. In order that these purposes of the association may best be carried out and its discussions made accessible to as large a number of physicians as possible, meetings for the present will continue to be held on the Monday preceding the Scientific Meeting of the American Medical Association. Chronic arthritis is the greatest single cause of disability and suffering in temperate climates. The magnitude of the suffering and disability caused by arthritis offers a major challenge to the medical profession and to the public. Many etiologic factors are operative in the early and later stages of chronic arthritis. While one, such as chronic infection, may be the outstanding cause, the correction of which is sufficient to swing the balance toward recovery, it frequently happens that, in spite of the correction of perhaps this initial cause, other factors continue to be operative and the arthritis progresses. Therefore, classification or a program of treatment of chronic arthritis based on the theory of one or another causative factor must fail in clinical use and a broader view of the disease is required. The division of chronic arthritis into two clinical groups, atrophic and hypertrophic, seems to the American committee to offer the best clinical working classification for the present. The conclusions reached through many of the studies on the relation of one cause, such as infection, to chronic arthritis have been invalidated by failure of observers to take into consideration the natural history of the disease. In chronic arthritis, especially in the atrophic type, periods of spontaneous improvement occur, and conclusions as to etiology or therapy, based on treatment instituted at the beginning of a period of natural improvement, are likely to be misleading.

Chronic arthritis is to be thought of as a disease that affects the body as a whole rather than the joints alone. Each patient presents a special problem, and the employment of one procedure for all patients with a disease whose etiology and course vary in each case seems unwarranted. One of the chief functions of this association is to furnish a forum in which, through discussion, new ideas may be evaluated and fitted in with what is already known. It is our hope that the work begun by the American committee may be continued through the widened opportunities afforded by this association.

Focal Infection and Arthritis

DR. ARTHUR STEINDLER, Iowa City: Almost 120 years has passed since Benjamin Rush emphasized the effect of dental disease on generalized arthritis, and more than twenty years has passed since Billings (1912) and Rosenow (1915) forcefully directed attention toward the problem of focal infection. Nevertheless there is still an active controversy in which such a relationship between local and systemic disease is challenged, both in principle and in fact. Considering the high incidence of focal disease on one hand, and the great fluctuations in the usual course of systemic disease on the other, it is not strange that this question of relationship should be a most difficult one to settle.

It is not yet known how foci act to produce arthritis. Is a bacteremia produced? Are the joint manifestations actually metastatic lesions or the results of some toxic agent? Is it a question of elective localization, of a special tissue affinity? What are the agencies that determine why some persons are more prone to secondary focal infection? A focus of infection may be relatively harmless to the nonrheumatic individual but serious to the rheumatic one. Therefore the evaluation of focal infection should be considered not just in the light of statistical studies on the incidence of foci but by considering the effect of the combination of a focus and an arthritic diathesis.

Of 4,339 cases of nonspecific arthritis that have been studied, 3,004 were of type 1 (atrophic arthritis), 1,335 were of type 2 (hypertrophic).

Foci of infection were present in 17 per cent (520) of the cases of atrophic arthritis and in 17.7 per cent (240) of those of the hypertrophic type. These figures may be much too low, as many of the ambulatory patients could not be subjected to complete search for foci. In those with focal infection the relative incidences were as follows: The tonsils were believed to be infected in 55 per cent of cases of the atrophic type and in 64 per cent of those of the hypertrophic type, the teeth in 17 per cent of the atrophic and in 23 per cent of the hypertrophic, and the sinuses in 46 per cent of the atrophic and in 57 per cent of the hypertrophic. The biliary or gastro-intestinal tract was believed infected in 1.5 per cent of cases of the atrophic type and in 7 per cent of the hypertrophic, and the genito-urinary tract (including the prostate gland and adnexa) was believed infected in 6 per cent of cases of the atrophic type and in 5 per cent of cases of the hypertrophic type.

The evaluation of the effect of removal of foci is as follows: In the analysis of those cases in which removal of foci was followed either by subsidence or by decided improvement within days or weeks, it was found that 35 per cent of the cases of atrophic arthritis and 20 per cent of the cases of hypertrophic arthritis acted in this manner or gave a "positive response." In children, naturally, the response was better than in adults, but there were few patients less than 10 years of age in this group. These figures would therefore represent the probable upper limit of the percentage for positive response.

Because it was found in some of the cases that improvement did not persist during the time of observation, these cases were eliminated from the former group of cases that did not evince signs of recurrence of symptoms within one year, the remaining cases showing no recurrence. These remaining cases represented 15 per cent of the atrophic type and 8 per cent of the hypertrophic type. The second group, therefore, represents the lower limit of positive responses to the removal of foci.

In other words, the figure for immediate and striking response to the removal of foci for the atrophic type was 35 per cent and for lasting response for this type 15 per cent. The figure for immediate positive response to the removal of foci for the hypertrophic group was 20 per cent and that for lasting response was 8 per cent. It therefore appears that, even on the basis of the lower percentage of lasting and striking response to the removal of foci (15 and 8 per cent, respectively), the systematic policy of removal of established foci of infection in arthritis would be justified.

Treatment of Chronic Atrophic (Rheumatoid) Arthritis with Streptococcus Vaccine on the Basis of Skin Sensitivity

DR. CHARLES W. WAINWRIGHT, Baltimore: The relation of streptococci and streptococcic infection to chronic atrophic arthritis remains in an uncertain position in spite of the many diligent investigations pursued during the past decade. Not only do students of the disease differ about the interpretation of experimental results, but the results themselves lack uniformity. If a relationship exists, it might exist in one of three ways: (1) The joint lesions may be the result of the localization of streptococci circulating in the blood stream, (2) the joint lesions may be due to toxins liberated from some focus of streptococcic infection elsewhere in the body, or (3) the joint reactions may be allergic in nature and represent hypersensitivity of the joint tissues to streptococci, resulting from low grade infections or from the persistence of foci of infection in the body. If the first relation obtains, then the nature of the joint change and the method of its production are easily understood, for it is a metastatic infection that is being dealt with. If the second obtains, then a high degree of specificity is implied; if the third, then an equally high degree of specificity exists, or else one must assume with Clawson and Wetherby that there is a species rather than a strain specificity. If the joint changes are regarded as allergic, it is at times difficult to explain just how the contact of antigen with antibody in the allergic joint comes about.

Although the lack of uniformity in results obtained from blood cultures is striking, the presence of serum agglutinins for hemolytic streptococci in a very large percentage of cases of atrophic arthritis has been reported by numerous observers. It has also been reported that patients suffering from atrophic arthritis exhibit positive skin reactions to killed streptococci and their fractions in a larger percentage than do healthy persons or those suffering from some other disease.

At the Johns Hopkins Hospital we have been unable to duplicate the results of Cecil, Nicholls and Stainsby. Ninety-four blood cultures were made in ninety-one cases of chronic atrophic arthritis. The following organisms were obtained: Streptococcus viridans in one case, and diphtheroids in four cases. In addition, staphylococci were found in four cases and gram-positive bacilli in three cases, all considered contaminations. In fourteen cases, cultures of joint tissue were made: in twelve the cultures were negative, in two cases contaminating mold was encountered. Streptococcus viridans was found once, but not again when the culture was repeated. The serums in forty-six, or 90 per cent, of fifty-one cases were found to possess agglutinins for hemolytic streptococci in dilutions varying between 1:20 and 1:1,280. Tests were made with both living and heat-killed antigens. The extent of the dilution was somewhat lower than that reported by other observers.

All of the fifty-five patients who were tested gave positive skin reactions to one or more strains of streptococci, hemolytic and green, the whole organisms being used. An area of erythema 1 cm. in diameter or larger was considered a positive reaction. In most cases it was larger (from 1 to 5 cm. in diameter). In all cases the reaction was tuberculin-like in appearance. In twenty-four cases the intradermal reactions were to hemolytic streptococci alone, in three to Streptococcus viridans alone and in twenty-eight to both types. In 90 per cent, maximal reactions were to hemolytic streptococci and in 10 per cent to viridans, but no single strain predominated in causing maximal reactions. For reasons stated no series of controls or of patients without arthritis was made. No attempt was made to interpret these results in terms of causation. Twenty-one of twenty-eight patients have shown improvement when given intravenous injections of streptococcus vaccine prepared from the strain to which they were most skin sensitive for periods of from two to more than twelve months.

The presence of agglutinins for hemolytic streptococci in the serums of patients suffering from chronic atrophic arthritis seems well established. A positive reaction does not of necessity indicate a causal relationship between hemolytic streptococci and atrophic arthritis, but it does suggest that streptococci play a rôle in the disease. Agglutination may be due to the presence of natural, not acquired, or specific agglutinins (as Dawson, Olmstead and Boots suggest) but the frequency with which it occurs in atrophic arthritis is the most incriminating evidence thus far produced against the streptococcus in this disease.

When skin sensitivity to streptococci exists it does not necessarily indicate that there is also joint sensitivity or general sensitivity. The objections raised to the interpretation of skin reactions to autogenous vaccine, namely, that they may indicate varying irritability of the patients' skins, natural toxicity of the bacterial species, or perhaps sensitization to certain bacterial groups, must be considered. However, the effect of subsequent treatment with vaccines on the skin reactions indicates that they do represent a specific skin sensitivity to the strain used. I do not know that the diminution and disappearance of the skin reaction is a measure of desensitization, nor that the increase in the agglutinating power of the patients' serum is a measure of immunity. I do feel, however, that the skin reaction is the most definite evidence of hypersensitiveness obtainable.

DISCUSSION ON PAPERS OF DRS. STEINDLER AND WAINWRIGHT

DR. J. ALBERT KEY, St. Louis: Since it is said that no individual reaches adult life with normal tonsils and with normal teeth, it is unusual to hear that Dr. Steindler found foci in only about 17 per cent of his cases of atrophic and hypertrophic arthritis. It is noteworthy that he found foci of infection as frequently in cases of hypertrophic arthritis as in cases of atrophic arthritis. Few believe that hypertrophic arthritis is a bacterial disease. Only a small percentage of his patients were cured by removal of infected foci. Considering the natural course of the disease, it is known that this many or more get better in spite of anything that is done and under a large variety of forms of treatment from 50 to 60 per cent of patients are improved. With his vaccine Dr. Wainwright improves 75 per cent of his patients. Most physicians use vaccines in arthritis, and I use them myself with the full knowledge that there is no disease of which I can find record that has been proved cured by vaccines. It is all right to give vaccines provided one does not forget to treat the patient and his disease with additional accepted and indicated measures. With regard to cultures of blood and joints I can't confirm anybody's results, even my own. Some years ago I isolated staphylococci and diphtheroids. Sterilizing the skin better, I later failed to get the latter. The habit should be condemned of discarding all staphylococci as contaminants and considering the streptococci found as the cause of whatever disease one is studying. There is no more reason why arthritis should be due to streptococci than to staphylococci or diphtheroids. However, my own experiments convince me that the arthritis produced with streptococci and diphtheroids is more closely akin to human arthritis than that produced in animals with staphylococci.

DR. M. H. DAWSON, New York: Dr. Steindler stated that in considering the significance of infected foci in arthritis it was required to compare the incidence of foci of infection in arthritis with the general incidence of such foci in nonrheumatic diseases, but he failed to give any statistics on this important point. It is most important to distinguish between atrophic (rheumatoid) and hypertrophic (osteo) arthritis. I believe that they are two separate diseases, the latter being due to the degenerative changes of age and in no way being related to infection. The former seems associated in some way with infection. In atrophic arthritis I agree with Dr. Steindler that infected foci, especially in tonsils and sinuses, are of considerable importance and that their removal, especially early in the disease, may give excellent results. I also believe that the gastro-intestinal tract plays only a small rôle in the production of this disease; certainly the significance of its reported abnormalities remains most uncertain. Dental infection, I feel, is related more to nonarticular rheumatism than to atrophic arthritis. It is my experience also that removal of foci does not particularly affect the course of hypertrophic arthritis. Dr. Wainwright's cultural and agglutination studies are in accord with my own. The fact seems established that the serum from the majority of patients with atrophic arthritis possesses the capacity to agglutinate hemolytic streptococci. Furthermore, this agglutinating capacity is not related to the nonspecific agglutinating property exhibited by the serum in many acute febrile diseases. I

recently carried out a "blindfold" agglutination test on a large number of serums from a well known arthritis clinic. The results of this test demonstrated that it was possible to identify the serums of patients with atrophic arthritis in a high proportion of cases. More recently I have extended my agglutination studies to include precipitin tests. Various protein and carbohydrate fractions of Streptococcus hemolyticus have been employed. These studies indicate that there is a close approximation between the capacity of serums from patients with atrophic arthritis to agglutinate hemolytic streptococci and to precipitate various fractions of this organism. I do not believe that these immunologic reactions establish the etiology of atrophic arthritis, but, as Dr. Wainwright said, they constitute the most incriminating evidence that has been brought forward against Streptococcus haemolyticus in this disease. In my experience, skin reactions in atrophic arthritis are variable and difficult to interpret. In a limited series of observations I was unable to demonstrate any correlation between the degree of skin reactivity to various strains of hemolytic streptococci and the clinical condition of the patient. Furthermore, sufficient evidence has not been brought forward to indicate a relationship between skin reactivity and the reactivity of joint tissues. There is suggestive evidence, however, that patients with atrophic arthritis do, as a group, show a higher degree of skin reactivity to Streptococcus haemolyticus than do patients suffering from other diseases. Dr. Wainwright stated that twenty-one of a series of twenty-eight patients treated by the use of intravenous vaccines received definite benefit. However, as he mentioned, there was no control series and the treated patients received the additional benefit of from four to eight weeks' rest in bed. It has been my experience that an equally large proportion of patients show definite improvement on a regimen of adequate rest alone. During the last five years I have used hemolytic streptococcus vaccines on a large series of patients with atrophic arthritis. The methods of administration and the doses employed have been quite comparable to those just reported. The value of this form of therapy remains unproved.

DR. RUSSELL L. CECIL, New York: May I say a word about the bacteriology of atrophic arthritis? The results so far reported can be divided into three groups: (1) the work of those who find streptococci in the blood and joints of patients with atrophic arthritis but not in controls, (2) the group to which Drs. Dawson, Boots and Wainwright belong, who find practically all cultures of blood and joints sterile both in controls and in patients with atrophic arthritis, and (3) the group, represented by Dr. Callow's recent study on rheumatic fever and May Wilson's report on blood cultures in children with rheumatic fever, in which a high percentage of streptococci are found among patients with atrophic arthritis, with rheumatic fever and in controls. This situation shows how confused the whole problem is. If streptococci are only contaminations, one wants to know it. The question is far from solved. I don't think I am misquoting Dr. William H. Park in saying that he believes the streptococci I have isolated have actually been from the blood, but he is very conservative and cautious about interpretation. I recently asked Dr. William Elser to help me on this problem. Dr. G. I. Steffen took the blood cultures under the most carefully controlled conditions. In a dozen or more typical cases of atrophic arthritis he got positive blood cultures in about 50 per cent but streptococci in only one. The others contained diphtheroids. The latter may be of some interest in view of claims that they can be transmuted into streptococci. Nature would be playing a mean trick indeed if an organism that appears so frequently in blood cultures, that apparently produces immune reactions in the patient's serum, and that produces such a typical experimental arthritis in animals, would turn out to be nothing but a harmless contamination.

DR. RUSSELL L. HADEN, Cleveland: Dr. Wainwright's paper emphasizes one significant trend: Regardless of the isolation of this or that germ, or treatment by this or that method, the chief problem is to study the patient and see what happens to him. Dr. Wainwright talks of patients' hypersensitivity. In considering the problem of chronic arthritis, it would appear that certain "normal persons" are not, and perhaps never will become, sensitive or liable thereto whereas another individual will. In addition to isolating organisms and removing foci, one must study the other underlying characteristics of the patient. The correction of his altered soil may be more important than removing a focus, which is but the beginning of treatment.

DR. JOSEPH L. MILLER, Chicago: Physicians of this country have been slow to recognize the essential differences between atrophic and hypertrophic arthritis. It seems almost certain that they are two distinct diseases, hypertrophic arthritis being merely a degenerative disease. The rapidity with which certain patients get well after removal of an infected tooth makes me think that there is at times a profound psychologic effect therefrom. I saw one patient with arthritis recently who four weeks before had had a bad tooth removed. Before she got home from the dentist she was "all well." Recently she read of somebody dying of arthritis, and now her pain is back. Regardless of such instances, however, I approve of the removal of foci and the use of vaccines in addition to other measures of recognized merit.

DR. ARTHUR STEINDLER, Iowa City: Many patients, as I have mentioned, were unable to have a complete focal check for various reasons. At least 800 did have a complete search for foci, and of this group a small but definite percentage gave a satisfactory response to removal of foci. By response I don't mean cure; I mean that they obtained subjective relief, which was maintained for a considerable length of time.

DR. CHARLES W. WAINWRIGHT, Baltimore: May I say to Dr. Key that I feel that the vaccine has more than a psychic effect. Not uncommonly patients had a degree or two of fever with the initial injection, but when this occurred the subsequent dose was lessened, or at least not increased, and no further febrile responses generally were noted. Occasionally a particularly sensitive patient would experience a febrile reaction after the first three or four injections. In such cases much small doses were used until the reactive phase disappeared.

Nutritional Factors in Chronic Arthritis

DRS. FRANK J. SLADEN, DWIGHT C. ENSIGN and CLARKE M. MCCOLL, Detroit: Since 1928 we have been studying the eating habits of patients with chronic arthritis and of persons without arthritis. The dietary habits of a patient in the hospital even on a full diet cannot be considered as being his normal one, as his choice of food is not strictly within his control but lies within that of the dietitian and the markets from which she buys. We sought therefore to get a record of what such patients were eating at home under established habits. Records were kept on units of a week; thus, the normal daily fluctuations were minimized. One hundred and thirty-eight patients with chronic arthritis were studied; of these, 128 had hypertrophic arthritis and only ten had atrophic (rheumatoid) arthritis. In the study of a series of 148 persons without arthritis the average daily intake was 1,840 calories, protein 60 Gm., fat 84 Gm. and carbohydrate 211 Gm. These values are contrasted with the average intake of patients with arthritis: 1,609 calories, protein 52 Gm., fat 73 Gm. and carbohydrate 185 Gm. These figures do not suggest that people with chronic arthritis are accustomed to dietary indulgence in any respect, certainly not in carbohydrates, as we understand it is not unusual for active, normal people to consume as high as 450 Gm. of carbohydrate daily.

In spite of this, however, a craving for sweets was commonly confessed, and on closer analysis of the carbohydrate intake we found an otherwise hidden dietary error, a tendency to choose for their carbohydrate foods that may be called nonprotective foodstuffs, with resultant inadequacy in their intake of carbohydrates on the list of protective foods. Thus they favored sugars and sweets, refined cereals and pastries, potatoes and white flour and were shy on the use of unrefined cereals, dairy products, and fruits and vegetables, carbohydrates that contain large amounts of bulk and of the protective substances, minerals and vitamins. These observations were made the basis of therapeutic correction. The patients were encouraged to change the emphasis on the choice of carbohydrates used, to alter their type and not their amount. We have noted definite improvement in weight curves, bowel function, condition of the joints, and the general efficiency and well being of patients with both types of chronic arthritis.

(To be continued)

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

4: 129-160 (Oct.) 1934

The Physician's Relation to Cancer. K. F. Kesmodel, Birmingham.—p. 129.
Potentialities of Precancerous Lesions of Skin. T. Gaines, Mobile.—p. 133.
Tumors of Breast. A. Maxwell, Tuscaloosa.—p. 136.
Infection Versus Cancer of Female Genitalia. N. Sellers, Anniston.—p. 138.
Spinal Anesthesia. J. C. Bragg, Decatur.—p. 140.
Undulant Fever. J. G. McAlpine and D. G. Gill, Montgomery.—p. 142.

American Journal of Medical Sciences, Philadelphia

188: 441-592 (Oct.) 1934

Mechanism of Increased Fragility of Erythrocytes in Congenital Hemolytic Jaundice. R. L. Haden, Cleveland.—p. 441.
Value of Blood Sedimentation Test in Routine Medical Examination of Adolescents and in Certain of Their Diseases. J. R. Gallagher, Pottstown, Pa.—p. 450.
Meteorologic Effects on Sedimentation Rate of Erythrocytes. E. T. Hoverson, Kankakee, Ill., and W. F. Petersen, Chicago.—p. 455.
*Yeast or Vitamin B_2 as "Extrinsic Factor" in Treatment of Pernicious Anemia. H. C. A. Lassen and H. K. Lassen, Copenhagen, Denmark.—p. 461.
Studies on Effect of Narcosis on Rate of Locomotion of Polymorphonuclear Leukocytes in Vitro. H. Lowenburg Jr., Philadelphia.—p. 472.
Relation Between Total Reticulocyte Production and Degree of Bone Marrow Involvement in Pernicious Anemia. F. H. Bethell, Ann Arbor, Mich.—p. 476.
Relation of Amidopyrine and Allied Drugs to Etiology of Agranulocytic Angina. H. Jackson Jr., Boston.—p. 482.
Autohemagglutination. I. Sherman, Brooklyn.—p. 487.
Estimation of Cardiac Transverse Diameter in Children and Comparison with Cardiac Area. W. Gordon and W. Adams, Chicago.—p. 491.
The Q Wave in Electrocardiogram. A. W. Wallace, Watkins Glen, N. Y.—p. 498.
Aortic Stenosis of Inflammatory Origin with Differential Study of Acquired or Congenital Origin of Bicuspid Aortic Valve. L. F. Bishop, L. F. Bishop Jr. and M. Trubek, New York.—p. 506.
*Successful Method for Vaccination Against Acute Anterior Poliomyelitis: Preliminary Report. J. A. Kolmer, Philadelphia, with assistance of Anna M. Rule.—p. 510.
Poliomyelitis: Study of Four Hundred and Ten Patients at the Philadelphia Hospital for Contagious Diseases. P. F. Lucchesi, Philadelphia.—p. 515.
*Encephalitis in Children Apparently Congenital and Following Maternal Influenza. Winifred Bayard Stewart, Philadelphia.—p. 522.
Insulin Allergy: Treatment with Histamine. W. S. Collens, G. Lerner and S. M. Fialka, Brooklyn.—p. 528.
Significant Active Pulmonary Tuberculosis in Apparently Healthy Adult: Study of One Hundred and Forty-One Cases. H. H. Fellows, New York.—p. 533.
Tuberculin Reaction in Rheumatic Fever. Frances Pascher, Brooklyn.—p. 537.
Septicemia: Method of Treatment: Report of One Hundred Cases. F. Cadham, Winnipeg, Manit.—p. 542.
Value of Cutaneous Histamine Reaction in Prognosis of Pedal Lesions in Diabetes Mellitus: After Histories of Eighty-Nine Patients for Five Years. I. Starr Jr., Philadelphia.—p. 548.
Fatal Anuria Following Blood Transfusions: Inadequacy of Present Tests for Compatibility. E. L. DeGowin and C. W. Baldridge, Iowa City.—p. 555.
*Influence of Glycine on Creatinuria in Peripheral Neuritis. M. J. C. Allinson, H. H. Henstell and H. E. Himwich, New Haven, Conn.—p. 560.
Exophthalmos of Graves' Disease: Its Experimental Production and Significance. D. Marine and S. H. Rosen, New York.—p. 565.

Yeast or Vitamin B_2 in Treatment of Pernicious Anemia.—The Lassens treated eight patients having typical pernicious anemia with various yeast preparations, given partly without additions of any kind, partly after incubation with normal gastric juice. These yeast preparations were assayed by tests on rats as to their contents of vitamins B_1 and B_2. One preparation that contained no B_1 was found to be highly effective against experimental vitamin B_2 deficiency in rats. The extrinsic factor searched for by Castle is not identical with vitamin B_2 or B_1, and presumably not with any other fraction of the vitamin B complex. Yeast appears to be either completely without any antianemic effect or it possibly contains minimal amounts of antianemic factor. On addition of normal gastric juice it has not been practicable with any degree of certainty to ascertain an increase in the content of active antianemic principle.

Vaccination Against Acute Anterior Poliomyelitis.—Kolmer hesitates to advise the subcutaneous injection of a poliomyelitis vaccine known to contain some living virus, even though he believes it to be devitalized sufficiently with sodium ricinoleate to make it safe. He believes that three subcutaneous injections of this kind of vaccine at intervals of from five to seven days and in a dose of from 0.05 to 0.1 cc. per kilogram of weight is an effective method for vaccination against acute anterior poliomyelitis. If it is true that human beings acquire immunity to acute anterior poliomyelitis by contact with the virus even without demonstrable evidences of infection, it would appear that less vaccine may be required relatively to body weight than in the case of monkeys, especially since less antibody is probably required for the protection of human beings against small amounts of virus entering the upper respiratory tract than is required for the protection of monkeys inoculated intracerebrally with from fifteen to twenty minimal infective doses. Since these vaccines never produced the slightest evidence of infection, the author is vaccinating a group of children varying in age from 8 months to 15 years. The first dose has been 0.25 cc. for children less than 3 years of age and 0.5 cc. for older children up to 15 years. Varying amounts are being given in the second and third doses. Since the cord of a large monkey will yield about 200 cc. of vaccine, this will make sufficient vaccine for the immunization of fifty or more children.

Encephalitis in Children Apparently Congenital and Following Maternal Influenza.—Stewart reports seven cases that appear to present congenital encephalitis. The patients were born of mothers suffering with influenza in the later months of pregnancy. None of these women had symptoms suggestive of epidemic encephalitis. All survived the disease as far as can be determined, and none show any signs of the sequelae of encephalitis. The children, on the other hand, show character defects typical of postencephalitic behavior change, and in five cases there is evidence of organic involvement of the extrapyramidal system. Their symptoms have existed apparently from the time of birth. They give no history of acute illness, nor in any case did the onset of the symptoms coincide with the occurrence of one of the usual diseases of childhood. In five there is sufficient evidence of organic involvement of the extrapyramidal system to verify the diagnosis of encephalitic sequelae. Four are parkinsonian in type, while the fifth presents choreiform tremors, which are increasing in severity. The sixth case gives a definite history of lethargy, which was noticed at birth. Examination of the pupils revealed the reverse Argyll Robertson phenomenon. The seventh was the only patient in whom the physical observations were negative. Here the diagnosis was based on the type of behavior disorder. The majority of the cases, therefore, present both the behavior disorder as well as the organic signs characteristic of the sequelae of epidemic encephalitis. They appear to be congenital and follow maternal influenza. The hypothesis that the influenza bacillus may be the etiologic factor in epidemic encephalitis is suggested by the work of Crofton, as well as that of the author in collaboration with Evans.

Influence of Glycine on Creatinuria in Peripheral Neuritis.—Allinson and his associates observed a case of toxic peripheral neuritis with atrophy and creatinuria. Daily analyses were made of the urinary excretion of creatinine, creatine, nitrogen and sulphur. In contrast with other cases of secondary muscular atrophy, but like those with progressive muscular dystrophy and myasthenia gravis, the ingestion of glycine increased the creatinuria markedly. As the patient's condition improved, the creatinuria decreased and the reaction of glycine diminished correspondingly.

Archives of Surgery, Chicago

29: 527-696 (Oct.) 1934

Clinical Use of Pentobarbital Sodium as Preanesthetic Agent. O. W. Barlow, G. L. Fife and A. C. Hodgins, Cleveland.—p. 527.
*Gas Bacillus Infection Complicating Laparotomy. L. H. Nason and A. Starr, Boston.—p. 546.
The Breast: I. Lesion in Rabbits Resembling Chronic Cystic Mastitis. C. L. Fifer, University, Va.—p. 555.
*Primary Liposarcoma of Bone. L. Barnard, Oakland, Calif.—p. 560.
Changes in Bones of Extremities Amputated Because of Arteriovascular Disease. H. L. Jaffe and M. M. Pomeranz, New York.—p. 566.
Sequences of Experimental Infarction of Femur in Rabbits. G. H. Kistler, University, Ala.—p. 589.
Appendicitis and Acute Inflammatory Abdominal Conditions in Scarlet Fever: Reports of Nine Cases and Review of Literature. H. Brandman, Whiting, Ind.—p. 612.
Subacute Lymphogranuloma Inguinale: Reports of Two Cases. A. Weeks, B. C. N. O'Reilly, G. D. Delprat and W. P. Stowe, San Francisco.—p. 628.
II. Use of Bacteriophages in Treatment of Colon Bacillus Infections of Urinary Tract. W. J. MacNeal, Frances C. Frisbee and Martha Applebaum, New York.—p. 633.
Absorption of Dextrose and Water by Small Intestine and Colon: Experimental Study. R. A. Cutting, New Orleans.—p. 643.
The Viscerospinal Syndrome: Confusing Factor in Surgical Diagnosis. I. Wills and R. F. Atsatt, Santa Barbara, Calif.—p. 661.
Obstruction of Superior Vena Cava: Experimental Study. H. A. Carlson, St. Louis.—p. 669.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; J. Verbrugge, Antwerp, Belgium; A. B. Hepler, Seattle; R. Gutierrez, New York, and V. J. O'Conor, Chicago.—p. 678.

Gas Bacillus Infection Complicating Laparotomy.—Nason and Starr say that this condition is manifested by a fulminating clinical course, which may rapidly terminate fatally. Despite the widespread prevalence of the anaerobic bacilli, gas bacillus infection following laparotomy is relatively rare. The organisms have been identified in the discharge from abdominal drainage tracts. The gas bacillus has been isolated from the biliary tract and liver immediately after death. The infection may begin in the muscle of the abdominal wall, the peritoneal cavity or the liver. The pathologic changes are the result of the toxemia alone or of the toxemia plus the presence of organisms and gas. When muscle is involved it becomes edematous, necrotic and crepitant. The clinical picture is one of overwhelming toxemia. Within six to twelve hours after operation, certain alarming signs may appear in a patient whose postoperative recovery has been proceeding satisfactorily. If the infection involves the abdominal wall, crepitation may be elicited early. Of late the literature has contained many reports describing the clinical aspects of postoperative "liver deaths." Heyd, in discussing this entity, described three distinct types, one of which was similar to the clinical picture existing in gas bacillus toxemia and septicemia. The similarity in the clinical manifestations of gas bacillus toxemia and those of hepaticorenal insufficiency indicates that actually acute insufficiency exists as a result of gas bacillus toxemia. It is conceivable that in some cases the element of hepaticorenal insufficiency may be primary, with the gas bacillus infection engrafted on an already necrotizing, degenerating liver. Measures directed at lowering the temperature, combating the toxemia and supporting the circulation are indicated. Specific antitoxin should be given. Intravenous and subcutaneous infusions of large quantities of sodium chloride and dextrose solutions may be used in an attempt to offset the shock and toxemia. Concentrated solutions of dextrose are indicated because of the extensive damage to the liver and because of the need for a diuretic. At the first suggestion of this complication, large doses of gas bacillus antitoxin should be administered intravenously. The usual skin test for sensitivity should be performed. From one to four therapeutic doses of polyvalent antitoxin containing at least 10,000 units each of Bacillus welchii and Vibrion septique antitoxin per dose should serve as the initial administration. An additional therapeutic dose should be given intramuscularly. The intravenous administration of antitoxin should be repeated every two to four hours during the crucial period. If crepitation is elicited in the wound, the sutures should be removed, the wound laid open and smears of the exudate taken. Free incisions may be necessary if the process is extensive. Hydrogen dioxide or surgical solution of chlorinated soda may be instilled into the wound at frequent intervals. When the infection involves the blood stream, peritoneum or liver, the outlook seems hopeless. The prognosis in cases of the infection localized in the abdominal wall depends on the virulence of the particular bacterial strain, the severity of the toxemia and the resistance of the patient. Death occurred in the authors' four cases.

Primary Liposarcoma of Bone.—Barnard reports a case which, from the clinical and pathologic study, suggests strongly a periosteal origin of a liposarcoma which involved the upper part of the arm. The fact that fatty tumors termed "lipoma" may undergo sarcomatous change gave at first the impression that this was such a tumor. There were, however, several factors that did not coincide with this point of view. Of the tumors that have been reported, few involved the upper extremity and did not involve the bone but arose in the fascial planes from a preexisting lipoma, which was always encapsulated, and the history of its presence preceded for long periods its malignant change. The clinical picture in the present case was more characteristic of so-called periosteal sarcomas, but the pathologic observations did not fit this classification. That this was not a benign periosteal lipoma which had undergone sarcomatous change would seem evident from the lack of encapsulation and the absence of a tumor prior to the onset of severe symptoms. The osseous involvement was apparent in the earliest roentgenogram, and at the time of biopsy there was no infiltration of the subdeltoid sheath, which would have been a more logical site for local metastases or invasion than the cortical bone if the tumor had arisen extraperiosteally. The histologic picture of the tumor both locally and in the myriad of small metastases in the lungs, which were not demonstrable roentgenologically, suggests that this was a tumor of fatty origin. There was evidence of trauma from repeated dislocations of the shoulder, which was assumed to have been a factor in the origin or spread of this new growth.

Delaware State Medical Journal, Wilmington

6: 221-246 (Oct.) 1934

History and Progress of Medicine. J. S. McDaniel, Dover.—p. 221.
Impairment of Hepatic Carbohydrate Function Estimated by Levulose and Galactose. R. W. Tomlinson, Wilmington.—p. 230.

Georgia Medical Association Journal, Atlanta

23: 329-370 (Sept.) 1934

Nephrosis in Childhood. A. J. Waring, Savannah.—p. 329.
Foci of Infection in Allergic Reactions of Children: Their Relative Unimportance. L. Bivings, Atlanta.—p. 333.
Scarlet Fever and Its Complications. C. P. Savage, Montezuma.—p. 336.
Allergy. M. A. Ehrlich, Bainbridge.—p. 341.
Brodie's Abscess: Case Report. A. P. Evans, Macon.—p. 344.
Posterior Vaginal Hernia: Report of Two Cases. J. H. Dew, Atlanta.—p. 349.
Fatal Reaction Following Artificial Pneumothorax. J. C. Massee, Atlanta.—p. 359.

23: 369-410 (Oct.) 1934

Present Status of Gastric Surgery. W. Walters, Rochester, Minn.—p. 369.
Cancer of Bladder. M. L. Boyd, Atlanta.—p. 378.
*Underlying Principles in Repair of Double Harelip. F. C. Lee, Augusta.—p. 383.
Uterine Hemorrhage. L. C. Allen, Hoschton.—p. 389.
Fractures: Treatment of Fractures. H. M. Michel, Augusta.—p. 395.
Id.: Nonunion of Fractures. P. B. Wright, Augusta.—p. 396.

Operation for Double Harelip.—Lee stresses the necessity for early operation in double harelip but states that it is not justifiable until the baby's weight curve is definitely rising and the weight is at least as much as at the time of birth. Ether administered by a motor driven insufflation apparatus is satisfactory, after the patient has been anesthetized lightly with the ether cone. The first step to ensure symmetry is obtained by placing a single stitch of silk as a marker in the midline of the premaxilla at its free edge after a small bit of vermilion border has been removed from that region. Two other stitches as markers are placed through the upper lip at each nostril but inferior to the point where the lip is to be cut across. Both sides of the upper lip should be undercut near the alveolar process, care being taken to remain close to the bone. An incision is then made in each lateral part of the upper lip, as much as possible of the lip that is already formed being used. The incision should afford relaxation in order to bring the respective segments to the midline of the face; therefore it may be necessary to extend the incision almost parallel with the

vermilion border. It is desirable to have a slight redundance, as the excess tissue contracts and gives a better result. The small amount of crimson border that is superior is then removed with a scalpel, care being taken not to enter far into the nostril. After the remaining thin vermilion border on the premaxilla has been removed, care should be taken to leave as much normal skin as possible, and the lateral parts of the new upper lip are brought together in the midline to see whether enough relaxation is present, since thorough and complete relaxation of these lateral pedicles is essential to the repair. The first row of sutures is of silk and is placed with a number three French needle. These sutures are placed first at the nostril of one side, and they approximate the posterior and deeper aspects of the opposing surfaces. The knots are placed on the mucous surface and the threads are cut short. The interrupted suturing is carried anteriorly to the free margin of the newly formed lip and the sutures are placed into the lip and into some of the fibrocartilage in the premaxilla if necessary. The second row of sutures consists of three interrupted sutures of 000 plain catgut: the first suture is put well into the remaining upper lip and into the premaxilla, a similar stitch is placed on the opposite side and a third stitch is placed at the apex of the premaxilla at its junction with the two flaps. The third row of sutures can be either of horsehair or of silk and consists of bringing together the skin anteriorly. In order to ensure neat approximation and a small scar, it is advantageous to use a suture like an end-on-mattress stitch. A 1 inch piece of a number eight French, soft rubber catheter is inserted into each nostril and held in place with a suture to ensure patency. Compound tincture of benzoin boiled down to a soft putty-like consistency is applied to the sutures in the skin. A Logan bow is attached by means of adhesive strips to the cheeks immediately after operation. This may be left on for two weeks and the muscles of the face should be kept at rest. To this end as much as 3 grains (0.2 Gm.) of sodium bromide every two hours may be necessary. Keeping the patient quiet after operation is more important than the use of the Logan bow. The baby should be fed at the regular intervals normal for its age by means of a medicine dropper to which the terminal portion of a soft rubber catheter has been attached. Sutures can be removed at any time after the sixth day. Minor corrective operations may have to be performed to ajust the vermilion border or to excise portions of a broad scar. These operative measures should be done within three months of the original operation. Massage of the scar and nursing should not be allowed until five weeks after operation. The author gives the results in three cases of double harelip.

Journal of Biological Chemistry, Baltimore

107: 1-382 (Oct.) 1934. Partial Index

Colorimetric Method for Determination of Fructose in Blood and Urine. J. H. Roe, Washington, D. C.—p. 15.
Lipoid-Chlorine in Serum. J. P. Peters and Evelyn B. Man, New Haven, Conn.—p. 23.
New Method for Determination of Iodine. D. R. McCullagh, with technical assistance of V. Picha, Cleveland.—p. 35.
Thio Sugars. A. L. Raymond, New York.—p. 85.
Relation of Iron and Copper to Cytochrome and Oxidase Content of Animal Tissues. E. Cohen and C. A. Elvehjem, Madison, Wis.—p. 97.
Studies on Growth Factor in Liver. O. L. Kline, C. A. Elvehjem, J. A. Keenan and E. B. Hart, Madison, Wis.—p. 107.
Decomposition of Citric Acid by Bacillus Aertrycke. W. F. Bruce, Princeton, N. J.—p. 119.
Inhibitors of Milk-Curdling Enzymes. H. Tauber, New York.—p. 161.
Preparation of Highly Active Yeast Invertase. J. G. Lutz and J. M. Nelson, New York.—p. 169.
Anemia Caused by Deaminized Casein. A. G. Hogan and W. S. Ritchie, Columbia, Mo.—p. 179.
Metabolism of l-Cystine and dl-Cystine in Adult Dogs Maintained on Protein-Free Diet. J. A. Stekol, New York.—p. 225.
Effect of Carbon Dioxide on Calcium and Phosphorus Retention. J. C. Forbes, Richmond, Va.—p. 283.
Factors Influencing Utilization of Iron and Copper of Egg Yolk for Hemoglobin Formation. W. C. Sherman, C. A. Elvehjem and E. B. Hart, Madison, Wis.—p. 289.
Nuclease Activity of Bacillus Subtilis. D. A. MacFadyen, New York.—p. 297.
Crystalline Progestin. O. Wintersteiner and W. M. Allen, Rochester, N. Y.—p. 321.
Biologic Method for Estimation of Calcium Ion Concentration. F. C. McLean and A. B. Hastings, Chicago.—p. 337.
Chemistry of Human Epidermis: I. Amino Acid Content of Stratum Corneum and Its Comparison to Other Human Keratins. V. A. Wilkerson, Washington, D. C.—p. 377.

Journal of Nutrition, Philadelphia

8: 377-496 (Oct. 10) 1934

Nutritive Value of Lactose. A. E. Koehler and Sonia E. Allen, Santa Barbara, Calif.—p. 377.
Irradiated Vitamin B Complex and Dermatitis. A. G. Hogan and L. R. Richardson, Columbia, Mo.—p. 385.
Some Effects of Composition of Diet on Vitamin B and Vitamin G Requirement of Growing Rat. N. B. Guerrant and R. A. Dutcher, State College, Pa.—p. 397.
*Effect of High Fat Meal on Respiratory Quotient and Heat Production of Normal and Obese Individuals. B. D. Bowen, F. R. Griffith Jr. and Grace E. Sly, Buffalo.—p. 421.
Cellulose in Diets of Rats and Mice. C. M. McCay, with assistance of C. C. Ku, J. C. Woodward and B. S. Sehgal, Ithaca, N. Y.—p. 435.
Comparison of Vitamins B and G in Canned Strained Foods. Flora Hanning, East Lansing, Mich.—p. 449.
Inanition as Factor in Vitamin G Deficiency. D. G. Remp and F. C. Bing, Cleveland.—p. 457.
Carotene and Vitamin A Requirements for White Leghorn Chicks. W. O. Frohring and J. Wyeno, Cleveland.—p. 463.
Effect of Variations in Diet on Absorption of Food in Absence of Pancreatic Digestion. M. B. Handelsman, L. A. Golden and J. H. Pratt, Boston.—p. 479.

Effect of High Fat Meal on Respiratory Quotient.—Bowen and his associates discuss the possibility that a qualitative metabolic variation exists in the obese person. This variation from the normal is based on the observation of a lower postabsorptive respiratory quotient in the obese subject. They observed the effect of a large fat meal on twelve normal subjects, six of whom were slightly underweight, twenty nondiabetic obese and eleven obese diabetic subjects. The absorptive respiratory quotients indicate that the food mixture during this absorption is approximately the same in normal and obese persons. This response in the diabetic obese group suggests that less carbohydrate was being consumed during the utilization of fat. The observations were extended long enough to demonstrate the returning trend of the respiratory quotient to the postabsorptive level. No correlation between the curves of the absorptive respiratory quotient and the curves of the specific dynamic action could be demonstrated. A specific dynamic action of fat was present in all groups. It was found to be approximately the same in the obese and the normal persons. This action, however, was considerably greater in the obese diabetic patients.

New England Journal of Medicine, Boston

211: 653-702 (Oct. 11) 1934

Nuts as Bronchial Foreign Bodies. L. G. Richards and J. Walker, Boston.—p. 653.
Incontinence of Urine Due to Ureteral Ectopia. A. Riley and E. A. Gaston, Boston.—p. 666.
Psoas Abscess Resulting from Tuberculosis of Cervical Spine: Report of Case. L. Alpert, Middleboro, Mass.—p. 675.
Antituberculosis Vaccination. S. A. Petroff, Trudeau, N. Y.—p. 677.
Why Surgical Operations Benefit Patients with Pulmonary Tuberculosis. R. H. Overholt, Boston.—p. 682.

211: 703-746 (Oct. 18) 1934

Treatment of Cancer of Breast and Results of Operation. R. H. Overholt and E. B. Eckerson, Boston.—p. 703.
*Mesenteric Vascular Occlusion. J. E. Dunphy and R. Zollinger, Boston.—p. 708.
Haverhill Fever Following Rat Bite. F. H. Scharles, Kansas City, Mo., and C. V. Seastone, Boston.—p. 711.
Pancreatic Cyst. C. H. Hawes, Fall River, Mass.—p. 714.

211: 747-800 (Oct. 25) 1934

Subacute Pick's Disease (Polyserositis) with Polyarthritis and Glomerulonephritis: Report of Two Fatal Cases. M. J. Tremaine, Chicago.—p. 754.
Operative Relief of Extensive Cicatrization of Male Urethra and Perineum. J. D. Barney, Boston.—p. 759.
Phrenic Neurectomy in Pulmonary Tuberculosis: Evaluation of Early Effects. H. F. Hare, Boston, and L. F. Davenport, Waltham, Mass.—p. 762.
Health Forum. H. D. Chadwick, Newtonville, Mass, and H. L. Lombard, Boston.—p. 767.
Cancer of Esophagus. F. L. Hoffman, Philadelphia.—p. 769.
Spinal Fluid Dynamics During Encephalography. T. J. C. von Storch, Boston.—p. 773.

Mesenteric Vascular Occlusion.—Dunphy and Zollinger observed five cases of mesenteric vascular occlusion. The first four terminated fatally. In only two was a diagnosis of mesenteric thrombosis even considered and in only one of these was operation performed. Although the clinical picture varied considerably, several important features were recognized in

each case. 1. It was observed that regardless of the duration of the attack the clinical picture was not typical of any of the common surgical emergencies. It was not the problem of a mistaken diagnosis but of no diagnosis. However, the patients were ill obviously from an abdominal lesion that simulated obstruction. 2. The character of the pain in each case was out of proportion to the clinical picture. A significant characteristic of the pain was its persistence after the usual measures for its relief had been instituted. 3. The only constant physical observation was abdominal tenderness, more or less generalized, with rebound tenderness referred to the point of pressure. 4. All the patients had a high leukocytosis and a high or mounting pulse rate with a temperature that was normal or only slightly elevated. It was evident in each case that there was a gastrointestinal disturbance, but this was not manifested in any constant manner. Difficulty in moving the bowels without complete obstruction was seen in all cases. Vomiting was variable. Rapidly progressing shock was seen in one case. As a direct result of this study the fifth case of mesenteric vascular occlusion was recognized as such and an early and successful resection was performed. The authors do not maintain that the features outlined are essential to diagnosis, for the white count may be as misleading in this disease as in others. However, they feel that these features when present render a diagnosis much more tenable than previous observations would indicate.

New York State Journal of Medicine, New York

34: 831-864 (Oct. 1) 1934

Neurologic Aspects and Treatment of Birth Injuries. E. R. Carlson, New York.—p. 831.
Treatment of Sinus Thrombosis. T. L. Saunders, New York.—p. 837.
Physical Therapy in Industrial Injuries. J. B. Stevens, Syracuse.—p. 841.
Study and Treatment of Amenorrhea. C. A. Elden, Rochester.—p. 845.
Calcified Vessels of Lower Extremities in Young Man: Case Report. A. S. Rothberg, New York.—p. 850.
Familial Peptic Ulcer: Family History: Case Report. A. M. Dickinson, Albany.—p. 852.

Northwest Medicine, Seattle

33: 343-378 (Oct.) 1934

Migraine: Diagnosis, Differential Diagnosis and Treatment. R. M. Balyeat, Oklahoma City.—p. 343.
Preoperative and Postoperative Value of Luminal: Clinical Study. A. Mathieu, G. Suchow and J. D. Kindschi, Portland, Ore.—p. 351.
*The Postoperative Enema. C. W. Countryman, Spokane, Wash.—p. 355.
The Prostate Gland. J. G. Strohm, Portland, Ore.—p. 358.
Toxic Neuronitis in Pregnancy. J. E. Stroh, Seattle.—p. 360.
Functional Uterine Hemorrhage, with Especial Reference to Hyperplasia Endometrii and Relation to Menstruation: Consideration of Its Etiology, Treatment. K. H. Martzloff, Portland, Ore.—p. 362.
State Medical Society Cancer Organization. A. R. Kilgore, San Francisco.—p. 369.
Gonorrheal Arthritis: Treatment with Pregl's Solution. R. L. Taylor, Bellingham, Wash.—p. 371.

The Postoperative Enema.—Countryman emphasizes the fact that the routine use of enemas postoperatively often ordered by the house physician or supervising nurse is rather a sad procedure in the light of present day knowledge of the colon. He believes that one of the most important things in assisting the postoperative patient to regain normal intestinal activity is to give the intestine some lubricant and soft bulky material to work on. For the last two years his postoperative routine has been to give, from twenty-four to thirty-six hours after operation, or as soon as the patient's stomach will tolerate it, 1 ounce (30 cc.) of liquid petrolatum with agar morning and evening. The rectal tube is used liberally from the beginning and the Levine tube is used when indicated in upper abdominal distention. The patient is encourged to drink hot water, tea and black coffee. Cold tap water is allowed as desired unless there is considerable nausea and vomiting. A 5 per cent sodium bicarbonate and dextrose proctoclysis is used, one hour on and two hours off, until the stomach tolerates fluids. Pantopon, one-third grain (0.02 Gm.), is given as often as necessary to keep the patient comfortable. The cases in which the author has used this procedure have included gastro-enterostomy, cholecystectomy, acute intestinal obstruction, one with intestinal resection, hysterectomy and operations, such as salpingitis, both chronic and subacute, gangrenous and perforative appendicitis and the usual major abdominal surgery, both chronic and acute.

Philippine Islands Med. Association Journal, Manila

14: 329-372 (Sept.) 1934

Etiology of Placenta Praevia. H. Acosta-Sison, Manila.—p. 329.
Brief Account of Activities of Philippine Islands Medical Association. A. S. Fernando, Manila.—p. 333.
Anopheles Maculatus Theobald, Another Malaria Vector in the Philippines. A. Ejercito, Manila.—p. 342.
Treatment of Maxillary Sinus Suppurations. H. Velarde and G. de Ocampo, Manila.—p. 347.
Anthelmintics in General Practice. V. P. Gallardo, Aparri, Cagayan Province.—p. 350.

South Carolina Medical Assn. Journal, Greenville

30: 193-216 (Oct.) 1934

*Fracture of Hip Joint (Intracapsular): New Method of Skeletal Fixation. A. T. Moore, Columbia.—p. 199.
Indications for Surgery of Thyroid Gland. L. H. McCalla, Greenville.—p. 205.

Skeletal Fixation for Fracture of Hip Joint.—Moore describes a method of skeletal fixation for intracapsular fractures of the neck of the femur. After local preparation, from 20 to 40 cc. of a 2 per cent solution of procaine hydrochloride is injected directly into the hip joint. The needle is inserted at a point about two thirds the distance from the anterior superior spine to the top of the great trochanter. The direction is approximately toward the coccyx and enough solution is injected to fill the joint completely. The needle is withdrawn and a few cubic centimeters of the anesthetic is infiltrated into the skin and subcutaneous tissue below the greater trochanter, where a small incision is to be made. After a few minutes the hip is absolutely anesthetized. There is complete muscular relaxation, and reduction of the fracture can be accomplished by any method that the operator prefers. An incision of from 2 to 3 inches is made just below the great trochanter, exposing the lateral surface of the upper end of the femur. Three drill-pointed stainless steel pins, three thirty-seconds of an inch thick, are passed through the neck up into the head. The pins are inserted at varying angles, which fasten the head securely in position. The angle and length of the femoral neck may be determined by the Westcott technic. The average length of the drills is about 3½ inches. Protruding ends of the drills must be left so that subsequent removal is easy. These ends may vary from one-fourth to three-fourths inch or more. There is no danger of drilling through the head and acetabulum because one always stops short of the full length of the pin. After roentgenograms are taken, the pin is easily pushed in for the desired distance. The position of the reduction and of the pins is checked by roentgenogram or the fluoroscope. When the pins are in perfect position, six drill holes are made through the neck and up into the head, in addition to the holes in which the pins remain inserted, ensuring a better blood supply. A piece of wood is placed on the outer side of the femur and given a light blow with the mallet, ensuring that the fragments are driven well together. The wound is closed with two or three interrupted sutures. The patient can immediately move the hip freely in all directions, and this is encouraged so as to give the patient confidence in the strength of the fixation. The patient is put back to bed and told to turn, twist or do anything that he pleases so long as he stays in bed. The operation is almost free from shock. There has been nothing to cause shock if a gentle reduction has been done. The next day the patient may be up with assistance or using crutches. In a few days he may be dismissed from the hospital. The patient should use crutches for about six months.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

42: 555-610 (Oct.) 1934

Carcinoma of Islands of Langerhans with Metastasis to Liver Producing Hyperinsulinism: Report of Case. E. S. Judd, Rochester, Minn., L. S. Faust and R. K. Dixon, Denver.—p. 555.
Histologic Structure of Thyroid Gland in Patients Cured of Hyperthyroidism by Surgical Treatment. W. F. Rienhoff Jr., Baltimore.—p. 558.
Bacteriology of Goiter: Study of Human Thyroid Tissue and Attempt to Produce Thyroid Hyperplasia in Rabbits: Preliminary Report. Anne M. Heyman, Ann Arbor, Mich.—p. 574.
Malignant Tumors of Parathyroid Glands. E. M. Hall and L. Chaffin, Los Angeles.—p. 578.
Encephalography: Its Diagnostic and Therapeutic Value with Some Remarks on Subdural Air. M. A. Glaser, Los Angeles.—p. 587.
Spinal Anesthesia in General, Nupercaine in Particular: Report of Fatality; Division I. P. E. Spangler, Portland, Ore.—p. 597.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

46: 341-398 (Aug.-Sept.) 1934

Disease, Gadfly of the Mind, Especially Stimulus of Skin Diseases in Development of the Mind. W. A. Pusey.—p. 341.
Malignant Melanoma in Africans. J. H. Sequeira and F. W. Vint.—p. 361.
Rôle of Psychotherapy in Treatment of Asthma-Eczema-Prurigo Complex in Children. C. H. Rogerson.—p. 368.

Journal of Pathology and Bacteriology, Edinburgh

39: 255-550 (Sept.) 1934

Further Observations on Secretion of Brunner's Glands. H. W. Florey and H. E. Harding.—p. 255.
Buffering Power of Mucin Contained in Secretion of Brunner's Glands. R. E. Havard.—p. 277.
Lymphangio-Endothelioma of Heart Causing Complete Heart Block. C. B. Perry and H. Rogers.—p. 281.
Gangrene of Fingers and Toes in Case of Polyarteritis Nodosa. W. G. Barnard and W. M. Burbury.—p. 285.
Chondroma of Lung (Hamartoma Chondromatosum Pulmonis): Report of Case. N. E. Goldsworthy.—p. 291.
*Comparative Serologic Study of Streptolysins Derived from Human and from Animal Infections: Notes on Pneumococcic Hemolysin, Tetanolysin and Staphylococcus Toxin. E. W. Todd.—p. 299.
Variation in Pneumococcus. M. H. Dawson.—p. 323.
Erythrocyte Individuality in Relation to Transplantation of an Induced Fowl Sarcoma. A. Haddow.—p. 345.
*Preparation of Nutrient Agar, with Especial Reference to Pneumococci, Streptococci and Other Gram-Positive Organisms. H. D. Wright.—p. 359.
Further Notes on Tissue Culture of Gliomas, with Especial Reference to Bailey's Spongioblastoma. Dorothy S. Russell and J. O. W. Bland.—p. 375.
*Cultivation of Plague Bacillus. H. D. Wright.—p. 381.
Experiments on Portal of Entry of Bacteria and Production of Intestinal Infection. F. H. Teale.—p. 391.
Colonial Development of Organisms of Pleuropneumonia and Agalactia on Serum Agar and Variations of Morphology Under Different Conditions of Growth. Emmy Klieneberger.—p. 409.
Method for Separation of Erythrocyte Stroma and Its Effect on Blood Picture in Experimental Anemia. R. Lightwood, J. C. Hawksley and Ursula M. Bailey.—p. 421.
Biochemical Reactions of Hemolytic Streptococci from Vagina of Febrile and Afebrile Parturient Women. R. Hare and L. Colebrook.—p. 429.
Schultz Cholesterol Reaction in Suprarenal Cortex. R. Whitehead.—p. 443.
Preparation of Efficient Fat Stains from Insoluble Residues of Weakly Staining Solutions of Commercial "Sudan III." W. W. Kay and R. Whitehead.—p. 449.
Clostridium Putrificum in Association with Postoperative Tetanus. E. L. Morgan and H. D. Wright.—p. 457.
Viridans Effect of Streptococci and Production of Green Pigment from Hemoglobin by Other Reducing Systems. A. B. Anderson and P. D. Hart.—p. 465.
Pathology of Hepatolienal Fibrosis. J. McMichael.—p. 481.
White Blood Cells of Thyroidectomized Rabbits in Experimental Leukocytosis and Leukopenia. J. W. Orr.—p. 503.
Certain Practical Considerations Concerning the Hemolytic System in Complement Fixation Tests, with Note on Standardization of Droppers for Wassermann Test. E. J. Wyler.—p. 521.

Serologic Study of Streptolysins.—Todd states that hemolytic streptococci from human infections produce an antigenic streptolysin which is serologically group specific but not type specific. In addition to this antigenic form of streptolysin, which is subject to reversible oxidation and reduction, they also produce another variety of streptolysin which is not subject to reversible oxidation and reduction and which appears to have no antigenic activity. The streptolysins of hemolytic streptococci from animal infections do not appear to be antigens and they are not subject to reversible oxidation and reduction. Soluble streptolysin prepared from "pseudohemolytic" streptococci appears to be nonantigenic. Lancefield's groups of hemolytic streptococci each produce different varieties of streptolysin which may be distinguished from each other by their reactions to oxygen, to heat and to acid. Serums with a high titer of antistreptolysin from hyperimmunized horses neutralize tetanolysin and pneumococcic hemolysin to a limited extent. The degree of neutralization is not necessarily correlated with the antistreptolysin titer, and the different hemolysins are distinguishable by quantitative serologic methods. This partial antigenic overlapping of hemolysins can be demonstrated only by the use of hyperimmune serums; it is not seen when the comparatively low titrated antistreptolysin serums of patients infected with hemolytic streptococci are examined and it therefore does not interfere with the use of antistreptolysin titers for the diagnosis of streptococcic infections. The hemolysin of staphylococci is not serologically related to streptolysin.

Preparation of Nutrient Agar.—Wright points out that as in broth, so also in agar, the early addition of peptone results in more stable and satisfactory mediums for certain organisms. The diameter of colonies of streptococci, pneumococci, corynebacteria and some other organisms is not affected by the omission of dextrose but is considerably affected if peptone is not present in adequate amounts. Thick layers of agar and a low concentration of agar favor the production of large colonies of pneumococci, streptococci and corynebacteria. The addition of blood or serum to agar results in the formation of large colonies; the amount required is about the same for the two. The size of the colony appears to be influenced more by the amount of the available foodstuff than by the accumulation of by-products of growth. Filtration through thick filtering layers may cause marked deterioration of broth; it has less effect on agar, but mediums filtered through glass wool or thin paper tend to yield larger colonies.

Cultivation of Plague Bacillus.—Wright observed that the growth of small inoculums of plague bacilli is sometimes suppressed by oxidized constituents of broth prepared with the late addition of peptone. The plague bacillus is destroyed moderately rapidly if exposed to more than about 1 per cent of oxygen at 37 C. For aerobic surface cultivation of small inoculums blood (0.1 per cent), serum (10 per cent) or sodium sulphite (0.05 per cent or less) needs to be added to the agar. Such mediums yield maximal growth aerobically at 37 C. Aerobic growth occurs in broth without such additions. The plague bacillus dies within twenty-four hours in solutions of sodium chloride even under anaerobic conditions, especially if exposed at a temperature of 37 C.

Journal of Physiology, London

82: 129-264 (Sept. 19) 1934

Mechanism of Autacoid Function of Parasympathetic Nerves. A. B. L. Beznák.—p. 129.
Action of Insulin on Heart and Blood Pressure. R. K. Pal and S. Prasad.—p. 154.
Blood Volume and Oxygen Capacity of Fetal Blood in Goat. R. H. Elliott, F. G. Hall and A. St. G. Huggett.—p. 160.
Study of Mistakes in Color Matching Made by Persons with Defective Color Vision. A. B. Follows.—p. 172.
Unisegmental Reflexes in Dogfish. J. ten Cate.—p. 179.
Effect of Prolonged Hard Muscular Work on Sulphur and Nitrogen Metabolism. H. E. C. Wilson.—p. 184.
Efficiency and Performance of Vegetarian Racing Cyclist Under Different Dietary Conditions. G. M. Wishart.—p. 189.
Efficiency of Bicycle Pedaling in Trained Subject. R. C. Garry and G. M. Wishart.—p. 200.
Efficiency of Bicycle Pedaling. A. V. Hill.—p. 207.
Action of Single Vagal Volley on Rhythm of Heart Beat. G. L. Brown and J. C. Eccles.—p. 211.
Further Expermients on Vagal Inhibition of Heart Beat. G. L. Brown and J. C. Eccles.—p. 242.
Changes in "Efficiency" of Muscular Contraction During a Series of Twitches in Nitrogen. M. Cattell and J. L. Parkinson.—p. 258.

Lancet, London

2: 633-684 (Sept. 22) 1934

Use of the Diathermy Knife in Malignant Disease of Mouth, Nose and Pharynx with Analysis of One Hundred and Nine Cases. N. Patterson.—p. 633.
Arterial Hypertension. O. L. V. de Wesselow.—p. 636.
*Agglutinin Response to Recent Antienterica Vaccination. G. Stuart and K. S. Krikorian.—p. 644.
Rheumatoid Arthritis and Its Treatment by Gold Salts. J. Forestier.—p. 646.
*Cooley's Anemia. A. Moncrieff and L. E. H. Whitby.—p. 648.
Nonspecific Protein Therapy in Asthma. T. S. Nelson and G. Duckworth.—p. 650.

Agglutinin Response to Recent Antienterica Vaccination.—Stuart and Krikorian's experiments reveal that in human beings O agglutinin formation takes place as readily and often in as high degree after inoculation with suitable antienterica vaccines as it does during the course of enteric disease. In this respect a better response has been obtained with nonphenolized vaccines than with those preserved even for a short time in low concentrations of phenol. An explanation has been sought in the apparently adverse, although admittedly unknown, effect exercised by the phenol on the heat-stable antigen. It

is known that when typhoid immune serum is brought into contact with the phenol-preserved suspension of Bacillus typhosus known as Ficker's diagnosticum, the O agglutination fails altogether. It is suggested that in ordinary T and TAB vaccines the exposure of the O agglutinogen to the action of phenol over varying periods of time may lead ultimately to a loss of antigenic power and thus to an absence of O agglutinins in the vaccinated persons' serums. Arkwright concludes that "the heat-stable, smooth O agglutinogen is probably identical with the antigen which produces resistance and with the smooth heat-stable agglutinable substance." It is agreed that in order to be efficient an antityphoid vaccine should produce antibodies against the stable antigen; but all antienterica vaccines do effect to a greater or lesser extent the formation of O agglutinins in the majority of human beings, provided such vaccines are of relatively recent manufacture and administered in adequately interspaced dosage. It is not, therefore, a question of finding a method of vaccination that will fulfil this demand for O agglutinin production but a method that will ensure the maximal production and persistence of these antibodies. The authors believe that antienterica vaccines issued without the addition of a preservative, and inoculated shortly after preparation, best meet the case. The appearance and persistence of O agglutinins in significant titers follow in human beings and in rabbits the use of ordinary recently prepared antienterica vaccines but would appear to be more marked in the case of vaccines to which no phenol has been added as a preservative.

Cooley's Anemia.—Moncrieff and Whitby believe that Cooley's anemia appears to be a definite clinical entity and is probably a blood dyscrasia appearing as a recessive in the Mediterranean races and that it is comparable to the sickle cell anemia of the negroid peoples. They describe a case in a child, aged 1½ years, of Greek parents, which will provide an opportunity for further observation in that the mother is again pregnant and the infant after birth can be examined to determine whether it also has inherited the condition and, if so, at what age it is first evident. The patient itself did not respond to treatment with iron, and a blood transfusion produced some definite improvement. At an attempt at a second transfusion the patient died under the anesthetic. The authors emphasize that, though Cooley has clearly defined a disease entity, the features do not express the concept of von Jaksch's anemia as understood by English pediatricians. Advances in hematology and clinical knowledge prevent the inclusion of leukemic cases in the von Jaksch category, and the syndrome is no longer a convenient dumping ground for all the unexplained anemias and splenomegalies of infancy. Von Jaksch's anemia is a useful term even though the conception of it must be somewhat elastic. The term implies that in the opinion of the clinician and hematologist the prognosis is not hopeless—a feature emphasized by von Jacksch. In contrast to Cooley's group, there is not only this relatively favorable outlook if treatment with iron or transfusion is energetically pursued but there are also no constant familial trait and no bony changes other than those due to associated rickets—a by no means invariable complication. Von Jaksch's anemia appears to be a subacute hemolytic anemia, probably the result of infection in which there is in addition to the red cell changes a definite reaction on the part of the leukoblastic tissue resulting in the appearance of myeloid cells in the blood.

Medical Journal of Australia, Sydney

2: 305-336 (Sept. 8) 1934

Raw Apple Diet in Treatment of Dysentery. P. A. Earnshaw.—p. 305.
Early Diagnosis of Appendicitis: Clinical Use of Leukocyte Count in Patient's Home. F. S. Tange.—p. 310.
Colonic Diverticulitis. H. C. R. Darling.—p. 313.
Psittacosis in Australia. C. R. Merrillees.—p. 320.

South African Medical Journal, Cape Town

8: 629-664 (Sept. 8) 1934

Pitfalls of Medical Examinations for Life Insurance. H. S. N. Menko.—p. 631.
Agranulocytic Angina. R. Turner.—p. 632.
Focal Sepsis in Infants. B. G. v. B. Melle.—p. 636.
Hernia and Strangulated Hernia. A. R. McLachlan.—p. 638.
Bovine Tuberculosis in Its Relation to Public Health. G. de Kock.—p. 640.

Presse Médicale, Paris

42: 1513-1528 (Sept 29) 1934

Seminoma of Testicle and Seminoma of Ovary. A. Béclère.—p. 1513.
*Endocrine Roentgen Stimulation and Its Applications. P. Lehmann.—p. 1516.
Acute Postoperative Dilatation of Stomach Complicated by Perforation. J. Rousset.—p. 1518.

Endocrine Roentgen Stimulation.—Lehmann believes that the roentgen rays may stimulate the endocrine glands and that when this occurs it is a functional phenomenon entirely different from the phenomenon of cellular destruction. He used irradiations corresponding to 200 kilovolts filtered through 0.8 mm. of copper and 2 mm. of aluminum. The apparatus includes a Casel generator and a Coolidge Mégat tube. Only the trunk and head were irradiated at separate sessions. A dose of 20 roentgens was used at each session for the trunk and 30 roentgens for the head. The intervals between sessions varied from ten to fourteen days, depending on the duration of treatment. As a result of observations on animals, he believes that the roentgen produced priapism is identical with that produced by the injection of the urine of pregnancy. Clinically he has treated eleven patients affected with ovarian insufficiency. In two there were no results. In the nine others there was improvement after from three to six sessions. In eight other cases, postpuberty ovarian insufficiency existed. In six of these there was an increased abundance of the menstrual flow. He therefore concludes that roentgen therapy constitutes an excellent procedure for functional stimulation and that it offers a new means of action in endocrine therapy.

Schweizerische medizinische Wochenschrift, Basel

64: 889-912 (Sept. 29) 1934

Anatomy as Science of Formation of Moving Organic Entity. H. Bluntschli.—p. 889.
*Problem of Vaccination Against Whooping Cough. H. Rosenbusch.—p. 894.
Postoperative Thrombo-Embolism in Surgical Department of Hospital in Zurich in Years 1910 to 1930. H. Hess.—p. 897.
Trichomonas Infection. N. Kissling.—p. 902.
*Behavior of Thyroid Tissue Under Influence of Several Simultaneously Acting Growth Stimuli. M. Silberberg.—p. 903.
Cure by Psychoanalysis. Irène Ruefenacht-Gerber.—p. 905.

Vaccination Against Whooping Cough.—According to Rosenbusch, vaccine therapy of whooping cough is still in dispute, but he thinks that the authors who observed mostly failures worked with ineffective vaccines. He administered concentrated vaccines in sixty-seven cases. In forty-six the vaccine was promptly effective, in ten the results were somewhat retarded, in three the results were doubtful, and in eight the vaccinotherapy was a failure. Many of the children who promptly responded to the vaccinotherapy were not of a suggestible age, and this, together with the fact that none of the other therapeutic measures produced such favorable results, seems to indicate the possibility of a specific action. However, it is difficult to furnish definite proof of the specificity, but the factors that are cited to disprove specificity likewise fail to convince. On the basis of his experiences, the author recommends the use of the vaccine. Failures are encountered in all forms of treatment, and only extensive use will solve the problem.

Thyroid Tissue Under Influence of Growth Stimuli.—Silberberg investigated how several simultaneously acting growth stimuli influence an organ. The thyroid of young, growing guinea-pigs served as the object of experimentation, and it was determined what influence is exerted by potassium iodide, extract of the anterior lobe of the hypophysis and compensatory hypertrophy following ectomy of a lobe of the thyroid. In the case of simultaneous action of potassium iodide and extract of the anterior lobe of the hypophysis, histologic examination revealed the specific changes that are characteristic of these two stimuli. The extract promotes liquefaction of the colloid, while the potassium iodide counteracts rapid absorption of the softened and liquefied material. This explains the presence of greatly dilated acini and even torn acini. Thus both substances exerted their specific action, while in other portions an intermediate effect was observed in that the acini absorbed considerable amounts of fluid so that their lumens become dilated and their epitheliums somewhat flattened. The

dilatation of the acini was greater than if either extract or potassium iodide were administered alone. However, there was as a rule no summation of the actions and, under certain conditions, the potassium iodide may even reduce the reaction to the extract. If the hypophyseal extract acts as a qualitative growth stimulus on the quantitative proliferation energy of the compensatory hypertrophy of the thyroid, there is an increase in the number of cells as the result of the compensatory hypertrophy and the hypophyseal extract causes qualitative proliferation processes. For the collaboration of these two stimuli that differ in kind and in degree, the sequence of their action and the condition of the thyroid are important. The influence of the hypophyseal extract on the growth of transplanted thyroid tissue was studied on autotransplants and on homeotransplants. In a completely healed-in transplant from a thyroid that had not been treated previously, the hypophyseal extract produced the same typical changes that were produced in the normal thyroid. In homeotransplants there developed a conflict between the destructive action of the homeotoxic elements and the constructive, growth increasing action of the extract.

Archivio Italiano di Chirurgia, Bologna

37: 663-786 (Sept.) 1934

Behavior of Testicle Following Partial or Total Removal of Parietal Layer of Tunica Vaginalis. M. Montanari Reggiani.—p. 663.
Behavior of Lactic Acid in Blood in Suprarenal Insufficiency. F. Rabboni.—p. 687.
Behavior of Nerve Cells of Part of Small Intestine Above Stenosis. G. Nicolosi.—p. 707.
*Manifestations and Surgical Complications of Ascariasis. F. Virgillo.—p. 734.
*Histologic and Experimental Research on So-Called Enteric Chromaffin Glands. F. Zanardi.—p. 749.

Surgical Complications of Ascariasis.—Virgillo refers to several cases of ascariasis with prevalently surgical manifestations. They are spastic stenosis of the duodenum with ascarids in the duodenum and the stomach, intermittent intestinal occlusion with ascarids in the small intestine, ascariasis simulating appendicitis, ascariasis of the appendix and of the liver, ascariasis with acute diverticulitis of Meckel and ascariasis complicating intestinal perforation due to trauma. The first three cases were diagnosed on roentgen examination, the remaining four on surgical exploration. The author emphasizes the importance of roentgen examination in confirming obscure and deceptive abdominal syndromes due to the presence of the ascarids. In practical surgery, ascariasis is generally diagnosed roentgenologically. In ascariasis, when the intestinal loop is full of opaque liquid, the body of the ascarid shows a streaked shadow, with well defined contours, tapered at the ends, and with a winding course. When the loop contains little barium, it adheres to the body of the parasite, which is then presented as a thin and regular streak delineated by two long parallel opaque lines, sometimes interrupted. When the loop is empty, the worm has the appearance of a long hair. The symptomatology of ascariasis of the gallbladder is the same as that of biliary lithiasis. Therefore diagnosis can only be suspected, especially in children with involvement of the general condition due probably to parasitic toxins. It is always a more delicate and doubtful diagnosis because ascariasis is present in 60 per cent of cases presenting lithiasis of the biliary tract. In cases in which lithiasis is not found it is important to examine closely the pancreas, duodenum and stomach in addition to the gallbladder and the bile tracts in such a way as not to leave unobserved the parasitic lesion that originally caused it. From the surgical point of view, in countries in which ascariasis is prevalent, administration of santonin before operative intervention is a good prophylactic measure. Such remedies as santonin and oil of chenopodium may prevent serious complications in intestinal ascariasis, especially during infancy. In hepatic and biliary ascariasis, only surgical treatment is indicated. Santonin, inducing the death of the parasites, does not aid in their expulsion, and therefore the mechanical disturbance persists. In ascariasis of the gallbladder, cholecystostomy has the advantage of draining the biliary tract, thereby eliminating the parasites found outside the gallbladder. Cholecystectomy prevents the development of numerous parasites from eggs laid in the gallbladder walls, frequently altered by secondary chronic infection. When the ascarids penetrate into the pancreas, the best treatment is incision into the pancreas and drainage of the pancreas and of the region of the hepatoduodenal fossa. When ascarids are present in the mastoid, the lacrimal canal and the bronchi, surgical intervention is the method of choice.

Research on Enteric Chromaffin Glands.—Zanardi states that the chromo-argentaffine cells of the intestine are present throughout the enteric tube of man and of laboratory animals (dogs and guinea-pigs). They are more numerous in the large intestine and in the appendix of man, while in animals they are more numerous in the small intestine and the first part of the duodenum. They constitute a cellular species in themselves, differentiated from other epithelial elements of the intestinal mucosa by the presence of chromaffin and reductory granules, by the character of the nucleus and by the form and situation of the cell. They are present in the intestinal mucosa of the human fetus at the third month; at first they are more in evidence in the upper segments of the small intestine, but after the fifth month they appear in the large intestine and the appendix. Normally they do not exist in the human stomach or at least are scarce in that location. But they have appeared in cases of simple gastritis or gastritis associated with ulcer or carcinoma, in correspondence to the areas of intestinal metaplasia. No information has been obtained favoring the connective tissue origin of these cells either from the experimental study of regenerative processes or from the study of ulcerations, inflammations and tumors of the gastro-intestinal mucosa. The cells do not seem to take an active part in the regenerative processes of the gastro-intestinal mucosa, in that they are missing in the defect which recovers in a short time the loss of substance and that they appear only when the epithelium is perfectly differentiated; there they participate indirectly in the process of regeneration and are constantly more numerous in the zones bordering on the defect. The large chromo-argentaffine cells present in the mucosa of the chorion and in the submucosa of the large intestine of the guinea-pig (and sometimes of the human appendix) are clearly differentiated from the chromo-argentaffine cells of the epithelium by morphologic characteristics and thus may be classified as histiocytes. The author concludes that these cells may be explained as ganglionic cells, newly formed by multiplication of the preexisting ones and distinguishable from them by their argentaffine granule characteristics.

Dermosifilografo, Turin

9: 473-528 (Sept.) 1934

*Observations on Reaction of Deviation of Complement in Gonorrhea. U. Boncinelli.—p. 473.
Weltmann's Reaction in Dermatology. A. Midana and Rita Leone.—p. 494.
Syphilitic Contagion from Woman Free from Specific Manifestations and with Negative Serologic Reactions: Case. M. Tamponi.—p. 504.
Allergic Cutaneous Symptoms in Venereal Ulcer. F. Brunetti and G. Serra.—p. 513.

Deviation of Complement in Gonorrhea.—Boncinelli studied the deviation of the complement reaction with gonococcus antigen on 243 patients, the total number of serum reactions amounting to 280. One group comprised definite gonorrheal patients. A second group comprised subjects free from gonorrhea, a third, patients presenting clinically gonococcic disease forms, and a fourth, syphilitic patients showing positive or negative Wassermann reactions and being free from or affected by gonorrhea. In the first group the reaction was positive in 77 per cent of the cases; the simple gonococcus forms gave 56 per cent of positive reactions, while the more complicated forms were 89.7 per cent positive. In the group of subjects free from gonorrhea, the reaction was positive in only four cases (5 per cent), while the group in which gonorrhea was clinically evident showed 76 per cent of positive reactions. In the last group, consisting of syphilitic patients free from or affected by gonorrhea, the reactions were negative whenever gonorrhea was absent. In cases in which syphilis was accompanied by gonorrhea, the reaction was negative when the Wassermann reaction was positive and vice versa. The author concludes that the deviation of the complement reaction is sensitive and specific and that it merits wider application in diagnostic practice.

640.

become dilated and their epitheliums somewhat flattened. The

Semana Médica, Buenos Aires

41: 745-852 (Sept. 13) 1934. Partial Index

*Gastric Cancer: Atypical Forms. J. R. Goyena and H. J. d'Amato.—p. 745.
Calcified Primary Pyopneumocyst of Liver: Case. J. Arce and M. M. Brea.—p. 752.
Pellegrini-Stieda Disease. P. V. Begarie and M. B. Mateos.—p. 756.
Suppurative Acute Strumitis: Case. C. Preioni and T. Gioia.—p. 770.
Pulsatile Exophthalmos: Surgical Therapy; Case. A. J. Manes.—p. 773.

Gastric Cancer.—Goyena and d'Amato report twenty-eight cases of gastric cancer and conclude that atypical forms are frequent (36 per cent). The febrile acute form gave a frequency of 7 per cent. The fever in this form is, as a rule, of a continuous and irregular type and may not be high. The febrile acute form may be interpreted, from the anatomopathologic point of view, as an association of gastric ulcerous tumors and a permanent infection. Whether the infection is the cause or the consequence of the ulcers cannot be asserted. The most frequent atypical form of gastric cancer is the juvenile form (14 per cent). On account of its high frequency this form may be suspected even in patients less than 30 years of age. In the authors' group of the juvenile form, the two sexes were affected in the same proportion (7 per cent each in women and in men). This observation is not in agreement with the opinion of Mentier, who states that this form is more frequent in men than in women. Juvenile cancer develops at an earlier age in women than in man and its evolution is more rapid and grave in female than in male patients. If anachlorhydria is of diagnostic importance in gastric cancer, hyperchlorhydria or even the mere presence of free hydrochloric acid in the gastric secretions is not a negative sign for the diagnosis of gastric cancer. Marked hyperchlorhydria may be present in cases of pure gastric cancer without previous symptoms of peptic ulcer. The mental condition of patients suffering from the psychopathic form is probably due both to anemia, caused by a tumoral vasoconstriction and resulting in a diminished cerebral blood supply, and to the impregnation of the nervous cells by gastric toxins of tumoral origin. The form of gastric cancer with conservation of the appetite may develop in patients at any age, and not necessarily in patients with the juvenile form as Le Noir and Riege say. The appetite of patients with gastric cancer may change under various influences of mechanical or psychic nature and these influences may appear in the course of the disease and cause a transformation of the anoretic type into a type having normal appetite or even bulimia.

Archiv für Dermatologie und Syphilis, Berlin

170: 403-520 (Sept. 14) 1934. Partial Index

*Isolated Chancre-Like Pyodermia of Face. E. Hoffmann.—p. 403.
Cinnamic Chloroform, Corrosive Mercuric Chloride and Tincture of Iodine in Their Action on Hyphomycetes. W. Aldick.—p. 410.
Method for Study of Deep Growth of Fungi and Remarks on Problem of Dermotropic Action of Hyphomycetes. H. Hruszek.—p. 425.
Statistics on Complications Caused by Arsphenamine. W. Burckhardt and E. Diem.—p. 435.
Saprophytic Occurrence of Hyphomycetes on Clinically Healthy Skin, with Especial Consideration of Mosaic Fungi. W. Stumpf.—p. 449.
*Functional Disturbances of Liver in Skin Diseases (Further Experiences with Gelatin and Water Tolerance Tests). H. Döllken.—p. 456.
Sclerodermia and Mucous Membrane. J. Sellei.—p. 464.

Isolated Chancre-Like Facial Pyodermia.—Hoffmann observed a number of patients who had isolated chancre-like pyodermias on the face. In some patients the lesion appeared on the eyelid, in others on the temple or on the lip. While the genital form of the isolated pyodermia is most frequent in children, the facial type seems to predominate in adults. The chancre-like pyodermia appears nearly always as an isolated focus and presents a syphiloid or a vacciniform aspect in that it resembles a button-like, eroded, ulcerated primary lesion. The characteristics are the firm basis of the lesion, the superficial and rather smooth ulceration, the serous discharge, the red color of the narrow eroded rim, the yellowish or dark crust and the firm swelling of the lymph nodes. It appears that the process has an especial affinity for delicate tissue. The author considers justified the assumption that maceration with urine plays a part in the genital lesions, and he points out that the localization of the facial pyodermias indicates that tears and saliva may play a similar part. The process usually begins with a blister and heals within four to six weeks. The differentiation from syphilitic and other specific lesions is important not only in the isolated chancre-like pyodermias that appear on the genitalia and on the oral mucous membrane but also in those that appear on the face. The absence of spirochetes, of Paschen's bodies and of Guarnieri's bodies in repeated tests and the rapid disappearance of the process and of the swelling of the lymph nodes following the application of anti-impetiginous remedies are important factors in the differential diagnosis. The fact that after several months an isolated relapse may appear on a symmetrical site is worthy of note.

Functional Disturbances of Liver in Skin Diseases.—In functional tests of the liver, Döllken found that the gelatin-water tolerance test of Mancke and Rohr gave satisfactory results. He made tests on 180 persons to determine the behavior of the liver in persons who had the same disorder. A tabular report lists the various disorders in which the functional test of the liver was made, the number of patients and the outcome of the test. A disturbance of the liver was detected in about 15 per cent of the cases. The test revealed that patients with psoriasis were free from hepatic impairment. In the patients with eczema, the results of the test were too dubious to give the possibility of a more strict classification, for in more than 10 per cent the test indicated a disturbance of the liver, while in the others the test was negative. Conditions were similar in syphilis. However, liver impairment was demonstrable in all cases of dermatitis exfoliativa and in arsphenamine dermatitis. In arsphenamine dermatitis the behavior of the liver was especially noteworthy, because the functional disturbance of the liver was no longer demonstrable after the disappearance of the cutaneous lesion.

Klinische Wochenschrift, Berlin

13: 1377-1416 (Sept. 29) 1934. Partial Index

Normal Urea Content in Blood and Cerebrospinal Fluid. G. Straube and R. Hofmann.—p. 1377.
Investigation of Epinephrine-Like Substance with Circulatory Action in Liver Extracts. F. Grabe, O. Krayer and K. Seelkopf.—p. 1381.
Lung as Blood Depot. M. Hochrein and C. J. Keller.—p. 1383.
Determination of Vitamin C in Blood Serum. E. Gabbe.—p. 1389.
*Bile Acid Tolerance Test for Determination of Hepatic Function. S. Nakagawa, S. Iimuro and S. Suzuki.—p. 1392.
Influence of Intracutaneous Injection and of Histamine Iontophoresis on Basal Metabolism and Blood Chemistry. W. Loewenstein.—p. 1394.
*Atropine in Angina Pectoris. D. Scherf and P. Schnabel.—p. 1397.

Test for Determination of Hepatic Function.—The bile acid tolerance test described by Nakagawa and his associates is conducted in the following manner: On the empty stomach the patients are given 200 Gm. of bread with butter and 100 cc. of milk. This comparatively dry diet is given in order to avoid an excessive quantity of urine, which would make the test ambiguous. Within thirty minutes after this breakfast the patient completely voids the urine that serves as the control specimen. Then 1.5 cc. of a 20 per cent solution of a bile acid is slowly injected into the cubital vein. After this injection, the patient has to void every thirty minutes until the second hour. Of each of these specimens 1 cc. is put into Widal tubes, and one drop of acetic acid is added. In addition to this, Hay's test is done on the filtered urine, and the urobilinogen and the urobilin are determined by means of Ehrlich's and Schlesinger's reagents. The test is considered positive if the specimens of urine eliminated after the injection show (1) a white turbidity following the addition of acetic acid, (2) a positive Hay's test and (3) urobilinogen and urobilin in larger quantities than in the control specimen. The authors performed this test on normal persons and on patients with hepatic disorders. In cholelithiasis, chronic cholecystitis and cirrhosis of the liver the test was positive, and, since the discharge of the bile was not obstructed, it may be concluded that the positive outcome of the test is due to the reduced capacity of the diseased liver to intercept and eliminate the injected bile acid. However, the bile acid tolerance test does not indicate whether the other functions of the liver are impaired. But since this intercepting and eliminating function seems to be the one that is impaired the earliest and in the largest number of cases, the test will generally reveal whether there is an impairment of the hepatic functions or not. The test is of course without value for the differential diagnosis.

Atropine in Angina Pectoris.—According to Scherf and Schnabel, atropine increases the frequency of the heart. On the basis of observations they stress that in angina pectoris great precaution is necessary in the use of remedies that increase the cardiac frequency. They show that in arteriosclerotic and syphilitic coronary stenosis atropine, because of its accelerating influence on the heart action, may lead to dangerous disturbances in the blood perfusion of the cardiac muscle.

Monatsschrift für Kinderheilkunde, Berlin

60: 401-496 (Sept. 5) 1934

Venous Pulse in Healthy Children. W. Ochse and E. Püschel.—p. 401.
Problem of Pneumococci During Childhood. G. Joppich.—p. 407.
How Long Do Diphtheria Patients Require Rest in Bed? P. von Kiss.—p. 426.
Cause and Outcome of Salaam Convulsions. J. Schoedel.—p. 436.
*Auto-Urotherapy. M. Krebs.—p. 442.
Desensitization Experiments in Eczema. M. Krebs.—p. 445.

Auto-Urotherapy.—Krebs shows that it is possible to influence favorably allergic and spastic conditions with the intramuscular injection of a child's own urine. He observed prompt improvement in children with hay fever and with asthma. He usually injected 0.5 cc. of the urine. The injections were repeated at intervals of from two to twelve days. The favorable results obtained in hay fever and asthma induced the author to try the treatment in spastic conditions of an entirely different type; namely, in those that were probably caused by obstetric injuries. Here too improvement was noted, but the author admits that this improvement is not a complete cure. Nevertheless, he thinks that auto-urotherapy deserves a trial in pediatrics, particularly in children with hay fever or asthma. The effective substance of urotherapy is still unknown; its efficacy is due neither to nonspecific protein bodies nor to antigen action.

Münchener medizinische Wochenschrift, Munich

81: 1411-1450 (Sept. 14) 1934

Rational Therapy? P. Martini.—p. 1411.
*Thrombo-Embolism: Its Pathology and Treatment. P. Neuda.—p. 1416.
Foundations of Prognosis of Internal Diseases. P. Morawitz.—p. 1419.
*Strophanthin in Treatment of Angina Pectoris. E. Edens.—p. 1424.
Treatment of Acne Vulgaris. L. Hauck.—p. 1427.
New Preparation of Sulphonated Bitumen Almost Odorless and Colorless. J. K. Mayr.—p. 1429.
Treatment of Status Epilepticus. F.-E. Kunze.—p. 1430.
Thoughts and Observations on Law for Prevention of Hereditary Diseases. Kayser.—p. 1430.

Pathology and Treatment of Thrombosis.—In studies on the predisposition to thrombosis, Neuda found that in the majority of patients with thrombosis auto-agglutinating substances are present, which agglutinate at room temperature not only their own erythrocytes but also erythrocytes of other persons of the same group and of group O. Tests prove that the substances are true auto-antibodies. Further experiments revealed that the addition of liver extract prevented the auto-antibody reaction, and this led to the introduction of liver therapy. The author employed it in thirty-five cases. With the exception of one patient, who died, all others recovered in a comparatively short time following intramuscular injections of liver extract. The liver treatment should begin as early as possible. In cases in which the sugar content of the blood is increased, the carbohydrate intake should be reduced. The fact that the agglutinating substances are active particularly at lower temperatures indicates the value of heat in the treatment of thrombosis. The injections of liver extract are continued until the pain subsides and the swelling is going down. This is usually the case after from three to six injections.

Strophanthin in Treatment of Angina Pectoris.—Edens shows that angina pectoris has lost much of its terror since the introduction of strophanthin therapy. Strophanthin is especially valuable in angina pectoris that develops in older persons with coronary sclerosis but is ineffective in angina pectoris produced by vasomotor factors. Thus strophanthin therapy may aid in the differentiation of angina pectoris of organic origin from that due to vasomotor factors. The author stresses that as a rule only the intravenous administration of digitalis preparations, particularly strophanthin, brings the desired results, while the oral and even the intramuscular administrations fail.

81: 1451-1486 (Sept. 21) 1934. Partial Index

Foundations of Prognosis of Internal Disorders. P. Morawitz.—p. 1451.
Utilization of Milk. E. Eckstein.—p. 1454.
Efficacy of Diphtheria Serum in Animal Experiment. F. von Bormann.—p. 1455.
*Toxin of Menstruation. H. Mommsen.—p. 1458.
*New Observations in Simmond's Disease. K. Herman.—p. 1460.
Coalescence of Labia Minora During Childhood. H. Schlack.—p. 1465.

Toxin of Menstruation.—Mommsen shows that it cannot be doubted that there is a menstrual toxin. However, he thinks that terms such as menotoxin should be avoided, because they are misleading. The menstrual toxin may be demonstrated by the arresting influence on the growth of germinating lupines and by the arrest of the yeast fermentation of dextrose. The toxin appears in considerable quantities in the milk of a lactating menstruating woman. Even if there is no genital bleeding, the toxin is eliminated at intervals of three or four weeks soon after delivery. The author considers an unfavorable effect of the menstrual toxin on persons in the environment as practically nonexistent, because even the nursling never develops serious disturbances. The slight disorders, such as diarrhea and paleness, that occasionally develop in the nursling are physiologic. The nature of the toxin is not known, but the author assumes that it is a substance originating in the lipoid metabolism and belonging to the group of biogenetic amines.

Simmond's Disease.—Herman describes three cases of Simmond's disease (hypophyseal cachexia). Its most important symptoms are severe cachexia and emaciation. Cachexia may be the only symptom. The author lists as the most characteristic symptoms white, pale skin, an old facial expression, rapid aging, falling out of teeth and hair, cessation of menstruation, impotence, reduced blood pressure and blood sugar, apathy, insomnia, lack of appetite, pressure and pain in the gastric region after eating, vomiting, and occasionally anacidity and constipation. The body temperature is lowered, there is a feeling of cold, particularly in the feet, also pruritus and occasionally pathologic changes in the region of the sella (calcified foci, xanthomatous infiltrations). The specific dynamic action is often lacking and the basal metabolism is reduced. Examination of the blood discloses anemia and occasionally there is eosinophilia. The author obtained favorable therapeutic results with hormones of the anterior lobe of the hypophysis. He found that these hormones had a greater effect on the metabolism than on the function of the genital glands. He emphasizes that the treatment with hormones of the anterior lobe of the hypophysis may eventually have diagnostic value, for if a cachexia quickly responds to treatment with these hormones the disorder is Simmond's disease.

Wiener klinische Wochenschrift, Vienna

47: 1129-1152 (Sept. 21) 1934. Partial Index

Diagnosis of Carcinomatous Cirrhosis. L. Hess.—p. 1129.
*Therapy of Enteritis Caused by Lamblia. E. Lauda.—p. 1132.
Constitutional Factors in Predisposition to Embolism. G. Nobl.—p. 1133.
Cutaneous Temperature and Angina Pectoris. F. Kisch.—p. 1135.
*Sedimentation Speed of Erythrocytes in Tuberculosis. I. Balanescu and S. Oeriu.—p. 1137.
New Methods in Treatment of Influenza. O. Löwinger.—p. 1139.
Diagnosis and Differential Diagnosis of Renal Tumors. R. Demel.—p. 1145.

Treatment of Enteritis Caused by Lamblia.—In the stool of a patient with an enterocolitis, which had been refractory to dietary and medicinal treatment, Lauda discovered Lamblia. By means of the duodenal tube he introduced into the duodenum of the patient a solution of 0.3 Gm. of neoarsphenamine in 200 cc. of water. The diarrhea ceased at once, and two days later the stools were of normal color and consistency. On the third day the stools were entirely free from the organisms but in spite of after-treatment with acetarsone they reappeared later. However, there was no relapse of the clinical symptoms. To destroy the organisms the administration of neoarsphenamine by means of the duodenal tube was repeated several times and was followed by renewed treatment with acetarsone. As the result of these measures they disappeared completely within ten days, and the author states that ten weeks after the treatment the patient was free from symptoms, the stools were always normal and repeated search for Lamblia always gave negative results. He points out that the literature reports other cases in which arsenic preparations produced such

MEDICAL LIBRARY

favorable results but that there are also cases in which this therapy fails completely. However, he thinks that it should always be tried. To avoid relapses, the patients should be warned that dietary mistakes and colds are likely to cause a relapse.

Sedimentation Speed in Tuberculosis.—Balanescu and Oeriu review the theories of the mechanism of sedimentation of erythrocytes. They describe the technic of their modification of the Westergren method. They found that in healthy persons the Westergren method and the Balanescu-Oeriu method disclose identical values of sedimentation speed. In patients with phthisis, the Balanescu-Oeriu method is less sensitive than the Westergren method. The authors consider the lesser sensitivity of the Balanescu-Oeriu method as an advantage in that the sedimentation values are less influenced by various factors. In cases of severe pulmonary tuberculosis it is sufficient to read the reaction after thirty minutes and after one hour, but in less severe cases a reading should be taken again after two hours and in rare cases also after twenty-four hours. The authors found that the sedimentation speed runs parallel with the course of the disease; the longer the duration of the tuberculous process and the greater the sedimentation speed the more unfavorable is the prognosis, but it is not permissible to base the prognosis exclusively on the sedimentation speed. The determination of the sedimentation speed is simple and gives quick results. Together with the clinical, biochemical and bacteriologic data it is of value in the diagnosis and prognosis of tuberculosis.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

109: 265-408 (Sept. 28) 1934

Uterus as Blood Depôt During Pregnancy. R. Hansen.—p. 265.
Suprarenal Cortex and Female Genitalia. E. W. Winter.—p. 273.
Biology and Diagnostic-Therapeutic Significance of Sex Hormones of Anterior Lobe of Hypophysis. W. Reiprich.—p. 285.
*Chloride Content of Blood and Rest Nitrogen in Their Relations to Hyperemesis of Pregnancy, to Ileus and to Certain Renal Diseases. H. Kretzschmar.—p. 333.
*Hidradenoma of Vulva. H.-E. Eichenberg.—p. 358.
Risk of Carcinoma of Cervical Stump Following Supravaginal Amputation. J. Fähndrich.—p. 383.

Blood Chlorides in Hyperemesis of Pregnancy.—Kretzschmar points out that hyperemesis may lead to hypochloremia and then discusses the development of hypochloremia and the cause of the increase in rest nitrogen in hypochloremia. He describes the symptoms that are common to the various disorders in which there exist hypochloremia and increase in the rest nitrogen. There is nearly always a considerable loss of fluid and of sodium chloride, which leads to dehydration and later to toxicosis. The skin as well as the other tissues is slack and withered. There is general prostration. The abdomen is drawn in so that in pregnant women the uterus may stand out. The blood pressure is reduced and the pulse is weak but rapid. The temperature increases and edemas may appear, while the renal function is insufficient. Icterus develops, the vomiting becomes continuous and diarrhea may develop in hyperemesis of pregnancy. The cause of the first nausea and vomiting is not definitely known as yet, but there are indications that changes in the central nervous system are responsible. The continuation of the vomiting, however, is frequently due to psychic factors, and during this stage it can often be arrested by suggestion. However, if manifestations of dehydration have set in, the psychotherapy must be combined with measures that refill the depleted water and sodium chloride depots. The author points out that sodium chloride is an old folk remedy in the treatment of vomiting and states that enemas of physiologic solution of sodium chloride and the intravenous injection of sodium chloride have been found helpful in cases of hyperemesis. He thinks that the interruption of pregnancy is justified only if the hyperemesis and severe toxic symptoms persist in spite of the administration of fluid and of sodium chloride.

Hidradenoma of Vulva.—Eichenberg describes twelve cases of hidradenoma of the vulva. The nodules were in the subcutaneous tissue and varied in size from that of a pea to that of an almond. In ten cases the growth was on the large labium and in two cases on the small labium. The author describes the histology of the growths, and he states that they are not always benign. He states that the hidradenoma of the vulva is a congenital malformation of the sweat glands. The dilated sweat glands in the surroundings, the concurrence of a cystic hyperplasia of the sweat glands with a hidradenoma and anomalies of the regional striated muscles indicate developmental disturbances. The most common form of the hidradenoma is the intracystic papilloma. Large pale epitheliums, which are a characteristic of mammary tumors, are also found in hidradenoma. A carcinoma may develop on the basis of a hidradenoma, but this is a comparatively rare occurrence. Indefinite demarcation, multistratification of the epithelium, strands of pavement epithelium and horny pearls occur quite frequently and as such do not justify the diagnosis of carcinoma; however, the transition to carcinoma is gradual and purely quantitative, and only experience gained by the comparison of clinical with anatomopathologic aspects will make the dividing line clear. The author thinks that in all cases the nodules should be extirpated and histologically examined and the patients reexamined.

Hospitalstidende, Copenhagen

77: 921-948 (Aug. 28) 1934

Roentgenologic Studies of Male Urethra and Apparatus Closing Bladder Together with Mechanism of Micturition Under Normal and Pathologic Conditions. K. K. Ortmann and H. Christiansen.—p. 921.
*Effects of Extract of Anterior Lobe of Pituitary on Elimination of Water Through Kidneys. P. Iversen and T. Bjering.—p. 940.
Investigations on Direct Poisonous Action of Some Metals on Cells, with Especial Regard to Suture Materials and Osteosynthesis (Report of Some Recent Investigations). H. Okkels.—p. 946.

Effect of Extract of Anterior Lobe of Pituitary on Elimination of Water Through Kidneys.—Iversen and Bjering find that the extract has two effects on the kidneys, the action which checks filtration being presumably vasogenic, and that which increases concentration, cellular. The two effects are believed to depend on two different hormones. The differing results obtained by different investigators are ascribed in part to the use of different preparations in different doses.

77: 949-976 (Sept. 4) 1934

*Gastric Achylia in Chronic and Subchronic Polyarthritis. O. Moltke and A. S. Ohlsen.—p. 949.
Barbital and Injury to Parenchyma of Liver. P. Gerlach and G. V. Bredmose.—p. 963.
Determination of Urinary Sedimentation According to Addis: I. Technic. A. Næraa.—p. 969.

Gastric Achylia in Polyarthritis.—Moltke and Ohlsen's examination of the gastric secretion in sixty-nine patients with chronic and subchronic polyarthritis by means of Ewald's test meal and fractional aspiration of the secretion after injection of histamine revealed achylias refractory to histamine in 36 per cent of the patients with primary chronic polyarthritis, while the number of achylias among the other polyarthritides corresponded to the usual results in ordinary hospital material. The frequency of the achylia in the first group cannot be explained. The achylia is apparently not connected with any special subgroup of primary chronic polyarthritis.

77: 977-1004 (Sept. 11) 1934

*Renal Rickets. Elisabeth Svensgaard.—p. 977.
III. Experimental Investigations on Effect of Corpus Luteum Extract and Anterior Pituitary-like Principle on Breasts of Infantile Guinea-Pigs Given Preliminary Treatment with Estrogenic Substance. E. Dahl-Iversen.—p. 988.
*Congenital Dystrophia Brevicollis: Case. T. E. H. Thaysen.—p. 998.

Renal Rickets.—Svensgaard describes three cases of chronic nephritis, dwarfism and rachitic changes in the bones, in a boy aged 15, a boy aged 3 and a girl aged 20 months, respectively. In the last two cases, uremia caused death; necropsy disclosed renal atrophy and atrophy of the thymus, together with rachitic changes in the bones. She asserts that the actual theories as to the cause of renal rickets fail to explain all cases.

Congenital Dystrophia Brevicollis.—Thaysen's patient, a woman aged 24, has the typical deformity of the neck without synostosis of the cervical vertebrae that is seen in Klippel-Feil's disease. He says that the abnormal shape of the cranium and the asymmetry of the face indicate defective development of the cranium during fetal life. The anomaly has caused a hypoplasia of the hypophysis by a contracting sella turcica, and this abnormality is regarded as the cause of the patient's dwarfism, genital atrophy, osteoporosis and delayed closing of the epiphyses. Her retarded mental development is believed to be due to the abnormal cranial development.